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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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TRIBUTARY TO THE LAKES.

It has been the dream of the progressive business element of the United States to see a canal cut at Nicaragua uniting the Atlantic and Pacific. With that barrier, the Isthmus, severed, and the projected work on the Hennepin Canal and Mississippi completed, Chicago and San Francisco would be united, and full cargoes of our products landed at the docks in Chicago River, where full return cargoes would be ready for shipment to this port without breaking bulk. That is but a single illustration, all of the great Mississippi basin and Lake region, all of the Atlantic and Gulf seaboard would be in close communication with the whole Pacific coast. That is the national view, while each of the sections named would equally be in touch with the whole maritime world. However, Congress, backed by the great financial interest invested in railways, sees a menace to invested capital, and the canal yet remains a dream only. So says the daily Commercial News and Shipping List of San Francisco.

RIPARIAN RIGHTS.

The syllabus of the Ohio Supreme Court of the decision in the case of Robert N. Pollock against the Cleveland Shipbuilding Co., on error to the Circuit Court of Cuyahoga County, is of much interest to vesselmen and dock-owners.

Pollock sued the company for damages because boats were tied up to his dock. The decision of the Supreme Court follows:

"1. The ownership of a riparian proprietor to the middle of a navigable river does not carry with it the right to exclusive use of the water over land ordinarily covered by water, but is subordinate to the paramount easement of navigation by the public, which includes the right to use such water for navigation and commerce, and such uses as may be reasonably incident thereto.

"2. Among the rights of the public is that of mooring vessels for the purpose of repairs and of putting in engine, boilers and machinery, after such vessels have been launched. Such use reasonably enjoyed, is not a trespass upon the lands of the owner, in front of whose river bank, outside of the dock line, such vessels are moored, and such owner will not be entitled to an injunction forbidding such use, unless special injury to his property is shown.

"3. But the right of the public does not extend to use of lands of the owner not covered by water. And where a builder of vessels so moored carries lines from them across the river bank of such riparian owner against his objection, and fastens them upon the land of such builder, and insists upon the right to continue such acts, the riparian owner may be entitled to an injunction, although his land is unimproved, and such acts produce no actual present damage. Judgment reversed and modified."

BRITISH SHIPPING.

While paying due attention to the lake marine interests, it is well that we also see what other trades are doing, and as the lake marine is the backbone of American shipping, we may glance towards our nearest competitor and view the British trade and transportation.

According to the statistics on the subject issued by the Board of Trade, 1896 was a record year and reads as follows: The statistics deal with the total entries and clearances at ports in the United Kingdom during 1894, 1895 and 1896. For the purpose, however, of indicating the enormous development that is taking place in our shipping trade, it may be well to go further back. At the middle of the present century—in 1850—the tonnage of vessels cleared and entered was under 40 millions of tons. By 1890 this tonnage had quadrupled, having grown to more than 164 millions of tons. After an increase so vast, no surprise would have been felt if the growth had somewhat slackened. There were, indeed, signs of this in 1895, the volume of entrances and clearances in that year being slightly under the figures for 1894. But another rebound took place in 1896, when the tonnage advanced by more than eight millions and a half and reached the great total of close on 191 millions. Here are the statistics for the three years covered by the Board of Trade tables:

TOTAL TRADE.

Year.	Entrances and Clearances. Tons.
1894.....	182,884,870
1895.....	182,107,668
1896.....	190,688,509

If we take the foreign trade of the United Kingdom alone, the results are equally remarkable, the tonnage of entrances and clearances having increased last year by close on five millions of tons:

FOREIGN TRADE.

Year.	Entrances and Clearances. Tons.
1894.....	80,536,359
1895.....	80,539,174
1896.....	85,462,513

Now for the share taken in this colossal ocean-carrying by British and Foreign ships respectively. There is an advance in both classes, but though the preponderance in favor of our own vessels is very great as regards the total trade, it is not so marked in the foreign trade:

TONNAGE IN TOTAL TRADE.

Year.	British tonnage.	Foreign tonnage.
1894.....	158,078,890	14,805,980
1895.....	157,656,328	14,457,340
1896.....	162,835,911	16,852,598

TONNAGE IN FOREIGN TRADE.

Year.	British tonnage.	Foreign tonnage.
1894.....	58,661,647	21,854,712
1895.....	58,691,926	21,847,239
1896.....	61,472,134	23,990,288

It will thus be seen that while the British tonnage engaged in our total trade increased by more than five millions in 1896 over 1895, the foreign tonnage increased by a little more than two millions. The circumstances are different so far as the foreign trade is concerned, the advance by both classes of ships being as nearly as possible equal. Some explanation of this may be found in the steps recently taken by a few shipowners in this country to sail their vessels under foreign flags. On such a point, however, the Board of Trade tables throw no light. The next matter of interest has reference to the tonnage of ships that entered and cleared at the principal ports of the United Kingdom from and to British Possessions and foreign countries. Here the leading position is once more occupied by London, followed by Liverpool, Cardiff, the Tyne ports, Hull, Glasgow and so on. The details are:

FOREIGN TRADE AT PRINCIPAL PORTS.

Ports.	Entrances and Clearances. Tons.
1. London.....	15,582,195
2. Liverpool.....	10,883,024
3. Cardiff.....	10,805,126
4. Tyne ports.....	8,461,572
5. Hull.....	3,913,909
6. Glasgow.....	3,191,707
7. Newport.....	2,385,575
8. Middlesbrough.....	2,016,807
9. Southampton.....	1,998,254
10. Dover.....	1,810,173
11. Sunderland.....	1,801,190
12. Leith.....	1,792,682
13. Swansea.....	1,495,717
14. Dublin.....	352,167

Were the coasting trade figures taken into account the results, in regard to entrances and clearances, might be considerably altered. Take, for example, the case of Glasgow. According to the Clyde Trust returns, the tonnage of vessels trading to and from our harbor in 1896 was nearer four than three millions. Glasgow takes a much higher place among ports when we come to the table of registered tonnage. Liverpool heads this list, having London and Glasgow as close companions:

TONNAGE REGISTERED AT PRINCIPAL PORTS.

Ports.	Vessels.	Tonnage.
1. Liverpool.....	2,200	2,072,194
2. London.....	2,740	1,661,084
3. Glasgow.....	1,668	1,536,417
4. Tyne ports.....	878	495,399
5. Hartlepool.....	284	361,357
6. Sunderland.....	273	279,903
7. Hull.....	809	226,904
8. Greenock.....	291	202,592
9. Belfast.....	250	146,710

The amount of the tonnage registered at all the ports of the United Kingdom shows little alteration for some years back, the total standing at between ten and eleven millions. As respects the nationality of the sailors employed in our mercantile marine, there is a steady advance of the foreign element. During 1894, out of a total of 240,458 men, there were 31,050 foreigners. This had increased in 1895 to 32,335 out of a total of 240,486. In 1896 the total of 242,039 included 33,046 foreigners. The tonnage of vessels built in 1896, exclusive of ships for the Royal Navy and foreigners, is given at 519,970. Here, of course, Glasgow is an easy first, while the Tyne ports come next in order.

NEWS AROUND THE LAKES.

DETROIT.

Special Correspondence to the Marine Record.

Great credit is due the Dry Dock Engine Works for their splendid work on the engine of the steamer State of Ohio. The machinery was a complete wreck, yet the staff completed all repairs from June 4th to July 2d. Mr. C. B. Calder is superintendent of the Dry Dock Engine Works.

Arrangements have been made for the establishment of a line of car ferries connecting Sandusky, Detroit, and Windsor, Ont. The companies interested in the project are the Baltimore & Ohio Railroad and the Moreton Track and Storage Company, Limited, of Detroit. The details of the new and important enterprise has been arranged, but the deal has not yet been consummated. Within a few days the Detroit Co. and the Baltimore & Ohio Railroad will sign the contract. The new project means the expansion of the railroad company and will make it a competitor in Michigan and Canadian territory. The railroad connections will place the Baltimore & Ohio Co. in a position to draw traffic from the railroads reaching to Lake Michigan, and from there Wisconsin and Minnesota by the aid of car ferries. The establishment of the Lake Erie car ferries is significant in many respects, one of which is the opening of a direct and short line from the Pittsburgh and Ohio coal fields to Detroit and Michigan. The Lake Shore Railroad and other companies reaching Detroit will be forced to suffer a loss of traffic. At present there is only one car ferry line on Lake Erie, the Conneaut and Port Dover Line. The Baltimore & Ohio Railroad has magnificent dock facilities at Sandusky, much better than it controls at Cleveland or Fairport. The Baltimore & Ohio Co. will have no financial interest in the ferry company, but will have a traffic arrangement which it is expected will be mutually beneficial. At Detroit and Windsor the ferry line will connect with the Grand Trunk Railroad and through that line with the Wabash, the Detroit, Lansing & Northern, the Flint & Pere Marquette, and other railroads leading from Detroit and Windsor. Two car ferries with a capacity of twenty-eight cars each will be placed in service at once and such additional barges will be furnished as the business may demand. His traffic arrangement will give to the Baltimore & Ohio entrance into a very large territory north of Sandusky and Toledo which hitherto it has not extensively operated in. Detroit and the territory adjacent will also be the gainers by having another direct and short route to the Atlantic Ocean, the Baltimore & Ohio's port being Baltimore.

CHICAGO.

Special Correspondence to the Marine Record.

Capt. John Prindiville chartered the steamer Nahant for oats to Sarnia at $\frac{1}{2}$ of a cent.

J. J. Rardon & Co. chartered the steamer Phenix for corn to Port Huron at 1 cent.

Albert D. Houghton, of Alexandria Bay, N. Y., chief engineer of the Vermont Line steamer A. McVittie, was joined in matrimony with Bertha J. Brown, of Davenport, Iowa, on June 20th last, at the Trinity Episcopal Church, Davenport, Iowa. I wish the newly-wedded couple much happiness and it is certain to result.

The schooner Trueman Moss is at the shipyard derrick, having her main mast taken out and replaced by a new one; the schooner George W. Naghtin is in dock, having her bottom and decks re-calced; the steam yacht Sentinel for a new wheel and bottom cleaning and painting; the tug Tacoma for repairs to stern bearing and to have a leak stopped; the steamer Atlanta was in for a new wheel.

On Saturday afternoon a large steel dump scow was launched at the shipyard of the Chicago Ship Building Co. at South Chicago. The scow was built for the Star Construction and Dredging Co., of Chicago, and is one of the largest in use. Its dimensions are 126 feet in length, 30 feet beam and 11 feet deep. Its capacity is 650 yards of earth and it has six water-tight bulkheads.

H. W. Cook & Co. chartered the steamer W. B. Morley for clipped oats to Buffalo at 1 cent; the steamer John Otis and schooner L. B. Shephard for lumber, Menominee to Chicago, at \$1.00 per M. feet; the steamer Westover and consort Bliss and schooners Horace Taber, Minnie Slauson and John Mark, Manistique to Chicago, and steamer Charles Rietz, St. Ignace to Chicago, for lumber at \$1.00 per M. feet.

The owners of excursion steamers running out of this port will have good reason to remember the 3d, 4th and 5th of July this year, as there never was such an exodus of pleasure seekers carried on their fine steamers on any three consecutive days before. The Goodrich Transportation Co.'s steamers Virginia, Indiana, City of Racine, Atlanta and Iowa were taxed to their full capacity, as were also the Graham and Morton steamers City of Chicago and City of Milwaukee; the Holland Line steamers Soo City and City of Holland; the Williams Line steamers City of Kalamazoo and W. H. Williams, and the steamer City of Grand Rapids. The L. M. & L. S. Transportation Co.'s steamer Manitou and the N. M. Line steamers Petoskey and Chicago also received a large share of the patronage of the pleasure seekers. To the whaleback steamer Christopher Columbus must be awarded the palm for carrying the largest number of passengers, she having carried nearly 10,000 people from Chicago to Milwaukee and back in her four round trips during the three days.

BUFFALO.

Special Correspondence to the Marine Record.

Adyices are that while there are no special features of interest, the movement of anthracite coal westward is small, and that the freight rates are such that boats are carrying it to destination at cost. Bituminous coal is fairly active and thought there are no changes in quotations, dealers are firm and stocks are lighter than usual. The shipments of coal westward by lake from Buffalo for the week ending June 25th, aggregated only 42,543 net tons, distributed as follows: 11,850 tons to Chicago, 8,500 tons to Milwaukee, 11,600 tons to Duluth, 2,580 tons to Toledo, 3,200 tons to Superior, 1,500 tons to Saginaw, 1238 tons to Fort Williams, 1,000 tons to Green Bay, 675 tons to Kenosha, and 400 tons to Sault Ste. Marie. The low rates of freight remain unchanged.

CLEVELAND.

Special Correspondence to The Marine Record.

The Wilson Liner Wallula, docked at the Ship Owners' Dry Dock this week, for survey and all necessary repairs as recommended by the inspectors of damage.

A yacht has reached here under the command or charge of Capt. Holmes, late of the Wilson Transit Co., who intends taking her around the world. Across the Atlantic touching Scotland cruising south to London, Liverpool, Havre, through the gut of Gibraltar to the Suez and across to Bombay, Calcutta, Japan, and across the Pacific to 'Frisco, thence through Mayellan Straits up our eastern coast to New York and back home to the lakes. It is understood that considerable money is backing the expedition.

THE CHICAGO NAVIGATION SCHOOL.

The following letter to Mr. McCurdy from Mr. Wilson will explain itself:

Mr. Geo. L. McCurdy,
11th Floor, Royal Insurance Building, City.

Chicago, Ill., June 16, 1897.—Dear Sir:—Referring to our conversation the other day relative to my school in navigation, I have the honor to forward herewith a prospectus of same, which will explain itself.

The school was organized during the winter of '95-'96 at the earnest solicitation of a number of vessel captains and others, and while it might have been called an experiment at the time, it proved so successful that during this last winter I had as many pupils as I could handle. In all, I had some sixty-five (65) pupils, twenty-five (25) of whom were captains and mates. I was more than gratified to have had so many of the latter, as at first it appeared very hard indeed to get many of them interested, however, like in all professions in life a few saw the benefits to be derived and they were not slow to back up their convictions even at the expense of being called down by some of their brother captains for taking up new fangled ideas in their profession.

They would be informed why we are not considered navigators on the lakes, we are pilots, why then take up the study. Yes they are pilots, and the finest in the world, and while that branch of the science which is absolutely necessary for the captain on the ocean may not have to be known by his brother captain on the lakes, yet there are some parts of it which is of utmost importance to him, and that of the compass is paramount. A captain should know his compass, as a mother does her child, whether he be on the Atlantic, or the Inland Lakes? Upon its accuracy depends the safety of the ship and crew, hence it is necessary for each and every captain to thoroughly understand the phenomena peculiar to the compass, namely, Variation and Deviation. During these days when our vessels are constructed out of steel and iron, thus causing them to become huge magnets in themselves independent of the magnetism of the earth, and possibly part of the cargo, the captain should readily understand how to determine each error and knowing same apply it properly to secure his compass course from the point of departure to the port of destination. Although an expert compass adjuster may have adjusted the compass of the vessel, he cannot completely correct it, and the captain will always find an error from the iron in his ship (Deviation), and he should be able to detect just how much he has for the course he is sailing, and allow for it to reach his port of destination in safety.

Some will say experience is all that is required of the lake captain, but it is strictly true? It is all right to pick up and guide him, if he is off his course he puts his helm over and continues on his proper course, had he known what caused him to be off and allowed for it in the first place all would be well, but let him be enveloped in a fog, and what is the result—he plunks along and the first thing he knows he is ashore on some shoal or beach. Some who are unfortunate enough to have thus damaged their vessel thousand of dollars will immediately say their compass is out. Why in name of common sense shouldn't it be out? But that does not relieve the captain for having run her ashore; he should have known just how much it was out and made proper allowance for the error.

The captains on the lakes are as a class a very intelligent body of men, and it is not difficult for them to pick up this subject in a short time. I know whereof I speak from the captains I have had in my classes in the past, as well as those whom I have come in contact with in the

Hydrographic Office. It is not necessary for them to attend my school to gain this information, I am always pleased to have them call at the Hydrographic Office during office hours, and I will deem it a pleasure to give them all the assistance in my power free of charge. That is what the government pays me for. If they wish to attend my school evenings, well and good.

You will see that every hour which the men who are intrusted with lives and valuable property, devote to the systematic study of that branch of the science of navigation which is absolutely necessary for the lake region, adds just so much to the safety of all who sail the lakes, either as passengers or members of crews, as well as to the vessel herself and the cargo she carries.

The kind proposition you made the other day relative to giving a certain amount in prizes to captains and mates passing the best examination, after the school term, will have an excellent effect. I respectfully request—if you will, to put same in writing, as I can use it to great advantage.

Very respectfully,

W. J. WILSON.

The following is a reply to Mr. Wilson's letter by Mr. McCurdy:

Insurance Agency of
George L. McCurdy,
Royal Insurance Building.

W. J. Wilson, Esq.,

U. S. Hydrographic Office, City.

Chicago, Ill., June 17, 1897.—Dear Sir:—Your favor of the 16th inst. received, giving me particulars of the School of Navigation, which I read with interest.

In regard to my proposition to you, if you will recollect it, I said I would set aside the sum of \$250 as prizes for the masters who passed the best examination. I shall expect you, of course, to advertise this fact so that the work will not be limited and that good results can be reached. By so doing we can make a continuous proposition year by year. I would suggest, however, that this amount, \$250, be divided among the mates as well as the masters, and I have an idea that you may get better results from the mates, who wish to be promoted, than you will possibly from some of the masters who have been serving a long time. So I think it would be a good idea if you would make four prizes for masters and four prizes for mates; the first prize to be \$50 and the other prizes \$25 each. This will give to each class then two first prizes of \$50 each and six other prizes of \$25 each. I shall stipulate, however, that the examinations shall be subject to the supervision of Capt. F. D. Herriman, Surveyor General of Great Lakes Register, and that the examinations be made during the winter or at such time as may be thought will be the most expedient. These are the only stipulations I care to make; the rest of the details to be left entirely with you, except that I would impress upon your mind to give this as much publicity as possible so that the best results may be reached. Yours truly,
(Signed) GEO. L. McCurdy,
Agent.

Mr. McCurdy's estimable and far-reaching departure is to be highly commended by everybody interested in the subject.

ARCTIC EXPLORATIONS.

The explorations of both Lieut. Peary and Dr. Nansen having demonstrated that the most practical route to the north pole is along the coast of Greenland, there is evidently to be a race for Arctic honors in that section of the frozen North. Lieut. Peary, as has been heretofore announced, will make a trip northward along the Greenland coast, this summer, to prepare the way for his expedition of next year. His intention is to make arrangements with a family of Esquimaux to go north with him and establish stations along the line, to cover their needs on the return trip. This plan has been endorsed as the best possible method of making a dash across the Arctic sea to the pole from the northernmost point of land.

It is announced from Norway that Capt. Sverdrup, who was Dr. Nansen's lieutenant in command of the Fram, will next summer take the Fram northward again, penetrating Smith's Sound and Robeson Channel as far north as possible along the northwest coast of Greenland. The captain's main object will be to ascertain how far Greenland extends northward, and to survey the northwest, north and northeast coasts. The success of the Fram's maiden expedition has given her a prestige that will develop great expectations among those who are interested in Arctic exploration, as to the results of her second voyage northward.

Capt. Sverdrup is a tried Arctic explorer, with the experience gained by his command of the Fram during Dr. Nansen's absence from the ship, but the ice conditions will probably give the stanch Norwegian exploring ship new experiences. She may not receive any "pinches" as severe as those which are graphically described by Dr. Nansen in the account of the Fram's first voyage, but she will encounter more difficult stretches of sea along the west coast of Greenland, and in the current-swept channels through which a ship must proceed northward in that part of the frozen sea. However, the grit and determination shown by the Fram's crew will contribute largely toward success, however great the difficulties, and if Capt. Sverdrup can induce his old crew to accompany him he will probably be able to make a new record along the Greenland coast.

PRACTICAL METHOD FOR FINDING COMPASS ERRORS.

ARRANGED FOR MASTERS AND PILOTS ON THE GREAT LAKES.

BY JOHN ROSS, LATE MASTER LIGHT-HOUSE TENDER 9TH. DISTRICT.

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CHAPTER VII.

TO CORRECT AND CONVERT COURSES AND BEARINGS.

It should be remembered that if a vessel steers one course by her compass between two points which have different variations, she does not follow a straight track as shown on the chart, but follows a curve; the amount of curvature depends on the distance, and difference of variation between the points, and the rate at which the variation changes. On the Great Lakes the curve, caused by steering one course from one point to another having different variations, will trend to the southward. On almost every straight track that is laid off on charts of the Great Lakes between points having different variations, for practical purposes, the variation at a point half way along the track may be applied to the true course to obtain the magnetic course.

The following simple rules and examples will serve to illustrate the application of variation and deviation, so that the master or pilot, knowing the variation taken from the Pilot Chart) and the deviation (taken from the deviation curve or table) can apply them in setting a course by his compass which will lead on the true course he takes from the chart. Or, if he knows the magnetic course (as given in Scott's New Coast Pilot) and the deviation of his compass (taken from the deviation curve or table), he will be able to set a course by his compass which will lead on the given magnetic course.

COURSES.

APPLYING THE VARIATION ALONE.

1.—To convert a given true course to a magnetic course.

Rule.—When the variation is easterly apply it to the left of the true course, and when it is westerly apply it to the right of the true course, to obtain the magnetic course.

Example.—From a position 2 miles south of Long Point to a position 1½ miles south of Pelee Spit (the Dummy) light, the true course taken from the chart is WSW. ½ W. An inspection of the Pilot Chart will show that the variation at a point half way along this track, is 2½ degrees westerly.

The true course being WSW. ½ W.
The variation 2½ degrees W.= ½ pt. W.

The magnetic course is WSW. ¾ W.

Note.—If the variation had been easterly it would have been applied to the left and the magnetic course would have been SW. by W. ¾ W.

2.—To convert a magnetic course to a true course.

Rule.—When the variation is easterly apply it to the right of the magnetic course, and when it is westerly apply it to the left of the magnetic course to obtain the true course.

In example 1 the magnetic course is WSW. ¾ W.
The variation is 2½ degrees W.= ½ pt. W.

The true course is WSW. ½ W.

Note.—If the variation had been easterly it would have been applied to the right and the true course would have been WSW. ¾ W.

APPLYING THE DEVIATION ALONE.

3.—To convert a magnetic course to a compass course.

It may happen that the compass has no deviation on the course the vessel is steering, in such a case the compass course will be the magnetic course and vice versa.

Rule.—When the deviations are easterly apply them to the left of the magnetic course and if westerly apply them to the right of the magnetic course to obtain the compass course.

In example 1 the magnetic course is WSW. ¾ W.

The deviation table and curve give 4½ degrees, westerly deviation on the WSW. ¾ W. course ¾ pt. W.

The compass course is WSW. ¾ W.

Note.—If the deviation had been easterly it would have been applied to the left and the compass course would have been WSW.

4.—To convert a compass course to a magnetic course.

Rule.—When the deviations are easterly apply them to the right of the compass course and if westerly apply them to the left of the compass course to obtain the magnetic course.

In example 3 the compass course is WSW. ¾ W.
The deviation is 4½ degrees W.= ¾ pt. W.

The magnetic course is WSW. ¾ W.

Note.—If the deviation had been easterly it would have been applied to the right and the magnetic course would have been W. ¾ S.

APPLYING VARIATION AND DEVIATION TOGETHER.

Rule.—When the variation and deviation are of the same name, add them together and apply the sum. When the variation and deviation are of different names, subtract the lesser from the greater and give the remainder the name of the greater; then apply the remainder as indicated by its name.

5. Knowing the true course on the chart to obtain the compass course that should be steered to make good the true course.

The true course in example 1 is WSW. ½ W.

The variation in example 1 is.. 2½° W.

The deviation in example 3 is.. 4½° W.

Total variation and deviation.. 7° W.= ¾ pt. W.

The compass course is..... WSW. ¾ W.

Suppose the variation to be..... 5½° W.
And the deviation to be..... 3¼° E.

The amount to be applied is..... 2½° W.
Or ¼ point westerly instead of ¾ point as above.

BEARINGS.

If a true bearing is taken from any object on the chart, and you want to know how this bearing should read on your compass when you are on the true bearing: Apply the variation of the locality, and the deviation of your compass for the course the vessel is steering, to the true bearing which was taken from the chart and the result will be the compass bearing of the object when you are on the true bearing.

Example 1.—A vessel bound to Escanaba and passing to the northward of Squaw Island, in Lake Michigan, desires to change her course when Squaw Island light bears SSE., true. The vessel is steering W. by N., by compass, and it is known (from the deviation table or curve) that on the W. by N. course the deviation is 5½ degrees, or ½ point westerly. The pilot chart shows the variation at Squaw Island to be 1 degree easterly.

Deviation..... 5½° W.
Variation..... 1° E.

Subtracting lesser from greater leaves... 4½° W.
Or ¾ point westerly.

True bearing..... SSE.

Combined var. and dev. on W. by N. course ¾ pt. W.

Compass bearing when light bears SSE. true S. by E. ¾ E.

Note.—It must be remembered that when a bearing is corrected for deviation, the deviation for the course which the vessel is steering by her compass must be applied to the bearing. Whenever bearings are taken the standard compass reading of the ship's head is necessary for the correction or conversion of the bearings.

Example 2.—A vessel which is steering W. by N. by her standard compass, takes a bearing of a light-house which is S.W. by compass. Obtain the true bearing of the light-house. As in the preceding example (1):

The variation is..... 1° E.
The deviation on W. by N. course is 5½° W.

The combined var. and dev. = 4½° W. = ¾ pt. W.

The compass bearing is..... SW.

True bearing of the lighthouse is.. SW. ¾ S.

Note.—If two or more bearings are taken while the vessel is steering one course, the same correction is applied to all the bearings.

TAKING BEARINGS WITH AN ALIDADE.

The necessity of getting quick and correct bearings, either in the daytime or at night, to locate the position of the vessel, is appreciated by every master and pilot, and the difficulty of taking bearings without the proper means is well understood. The most convenient and least ex-

pensive instrument for this purpose is an alidade, but it must be understood that this instrument is not intended for use in determining the deviation.

The alidade on Lake vessels (steamers) should be shipped on the top of the standard binnacle hood (see plate); here it is accessible to the officer on watch and, as is shown farther on, its use in connection with the standard compass makes it easier to apply methods which possess quickness and simplicity. When mounted the alidade should be on a fore and aft line with the keel and the lubbers' mark on the binnacle top should correspond with the lubbers' mark of the standard compass.

If bearings are to be taken at night a bull's eye lantern, with screen, can be kept in a convenient place, to be used for setting the circle and reading off the bearing.

To take a bearing with an alidade, first set the plate, which is marked like a compass card, so it corresponds with the course the vessel is making, then swing the sight vanes so as to see the object through them and read its bearing on the plate. Remember that the bearing read from the plate will be of the same character as is set on the lubber's mark. If the compass course has been set on the lubber's mark a compass bearing will result; if the true course has been set on the lubber's mark the true bearing will be obtained.

The following examples will assist to explain the foregoing:

1. A vessel sights Presque Isle light, in Lake Huron; she is steering NNW. by standard compass and on this course it is known she has 1½ degrees, or ½ point, westerly deviation; it is also shown on the pilot chart that there is 2½ degrees (or ¼ point) westerly variation, off Presque Isle. A true bearing of the light is required.

Variation..... 2½° W.
Deviation on NNW. compass course 1½° W.

Combined variation and deviation. 3¾° W. = ¾ pt. W.

Compass course..... NNW.

True course..... NNW. ¾ W.

Set the plate so that NNW. ¾ W. will be at the lubber's mark and take the bearing of Presque Isle Light-house, taking care not to move the plate. The bearing read from the plate will be the true bearing of the light.

2. Or, if time does not allow, set the plate on the course the vessel is steering by standard compass and read off the bearing, which will be the compass bearing of the light—then correct this compass bearing as follows, to obtain the true bearing.

Suppose the bearing of the light to be West.

Deviation on NNW. course..... 1½° W.
Variation..... 2½° W.

Total variation and deviation..... 3¾° W. = ¾ pt. W.

Bearing of light by compass..... W.

True bearing of the light..... W. ¾ S.

3. Suppose it is desired to change the vessel's course when Presque Isle light bears WSW. true. Find the true course the vessel is making, set the plate on the lubber's mark at the true course, and then set the sight vanes so as to point to WSW. on the plate; as soon as the light shows through the sight vanes the vessel will be on the true WSW. bearing. (This example is similar to example 1 previously quoted.)

Note.—When taking bearings of two objects to locate the position of the vessel (known as taking cross bearings), the best results will be obtained by selecting two objects which will give bearings about 8 points (or 90 degrees) apart. The bearings should also be taken quickly so that the vessel will, as nearly as possible, be in the same position when both were taken.

It will be found useful to the officer on watch if he knows the true course the vessel is making in addition to the compass course (the latter he has before him on the standard compass). If the true course is known he can set his alidade to it and, with no delay, take true bearings which can be transferred to the chart to locate the vessel's position.

ANOTHER NEW CONTRACT.

The announcement comes that the Union Dry Dock Co., of Buffalo has taken a contract for a steel steamer. Supt. Gaskin admits that the report is correct, but refuses to give any particulars. He says that nothing of the details can be given out at present. It is presumed that the steamer will be built for a Cleveland firm. On the other hand it is said that the Union Dry Dock Co. will build the vessel to their own account.

MARITIME LAW.

NEW ZEALAND INS. CO. vs. EARNMOOR S. S. CO., Limited.

(Circuit Court of Appeals, Ninth Circuit, Feb. 8, 1897.)
Admiralty Jurisdiction—Federal Courts—State Statutes—General Average—Interest.

In the exercise of their admiralty and maritime jurisdiction, the federal courts are governed solely by the legislation of Congress and the general principles of the maritime law, and are not bound by state statutes. Accordingly, held, that in its determination of the question of the allowance of interest in a libel upon a contract of marine insurance, a court of admiralty is not to be guided by state statutes as to the method of ascertaining the proportions of a general average loss and as to the allowance of interest on contracts.

Interest—Marine Insurance.

When the owner of a vessel has demanded from an insurer an amount claimed to be due under the policy of insurance by reason of injury to the vessel from perils insured against, and, the insurer, while admitting a less amount to be due, has resisted payment of the amount claimed throughout a long litigation, but has never tendered the amount admitted, it is proper for a court of admiralty to allow interest from the time of the demand on the amount finally found to be due, though slightly less than that claimed.

Appeal from the District Court of the United States for the Northern District of California.

THE QUEEN.

BANCROFT-WHITNEY CO. et al. vs. THE QUEEN.
(District Court, N. D. California. November 25, 1896.)
No. 10,301.

Laches in Admiralty—Statutes of Limitation.

More delay, for the full period of four years allowed by the states statutes of limitations, in bringing a suit in rem to recover damages to cargo, is not of itself, and in the absence of exceptional circumstances from which laches would be imputable, sufficient to justify the court in refusing to entertain the suit.

Same—State Statutes Creating Liens.

In a suit which is brought to enforce the lien given by the general maritime law for damage to cargo through the ship's fault, the limitation of one year contained in the California statute (Code Civ. Proc. sec. 819), which gives a lien for injuries to goods shipped on board a vessel, does not apply.

Carriers By Sea—Damage to Goods—Presumptions.

Where goods are returned to the port of shipment greatly damaged by sea water, a presumption arises of negligence on the part of the carrier.

Same—Perils of the Sea—Exceptions in Bill of Lading—Burden of Proof.

A shipowner against whom a prima facie case of negligence has been made out, does not discharge the burden of bringing himself within the exceptions of perils of the sea by simply showing that the ship was in a seaworthy condition at the commencement of the voyage, and presenting evidence which merely leaves in doubt the question as to how the leak arose which caused the damage.

Insurance—Subrogation—Dissolved Partnership.

An insurance company which has paid a loss upon partnership goods is not prevented by the subsequent death of one of the partners and the resulting dissolution of the firm, from maintaining a suit in admiralty in the partnership name to recover the amount of the loss from the carrier.

Carriers—Damage to Goods—Ascertainment of Damage—Auction Sales.

Sale by auction in a great mart of commerce is a proper method of determining the value of goods damaged in the hands of a carrier.

Admiralty—Jurisdiction in Rem.

The requirement that a libel in rem must state that the property is in the district does not prevent the court from acquiring jurisdiction in the case of a vessel which, being within the district at the time the libel is verified, departs before it is filed, but, returning after the filing, is then seized on alias monition. 61 Fed. 213, re-affirmed.

This was a libel in rem, by various shippers of goods shipped on board the steamer Queen, for breach of contract, for damages to said goods by sea water, alleged to and crew of the steamer, while said goods were being transported from the port of San Francisco to the port of San Diego, State of California. The case involved 37 claims. Various exceptions filed by the claimant to the libel were overruled in an opinion filed April 17, 1894. 61 Fed. 213. On May 12, 1896, the cause was heard on a motion by the claimant for a judgment in its favor after the libelants had rested their case, which motion was denied. 73 Fed. 74.

Andros & Frank, for libelants.

Geo. W. Towle, Jr., for claimant.

GILCHRIST vs. GODMAN et al.

(District Court, N. D. Illinois. April 5, 1897.)

i. Salvage—Wreckers Hired to Raise Vessel Are Not Salvors—Right to Compensation.

Wreckers employed by the master of a wrecked vessel

to raise the wreck, not being salvors, are entitled to wages for their labor, reasonably and faithfully performed, whether it is successful or not.

2. Marine Insurance—Liability of Underwriters For Services in Raising Wreck.

Insurers of a wrecked vessel, who send an agent to superintend the master's efforts to raise the wreck, become jointly liable with the owner for the pay of the wreckers employed by the master.

3. Same—Effect of Abandonment on Owner's Liability.

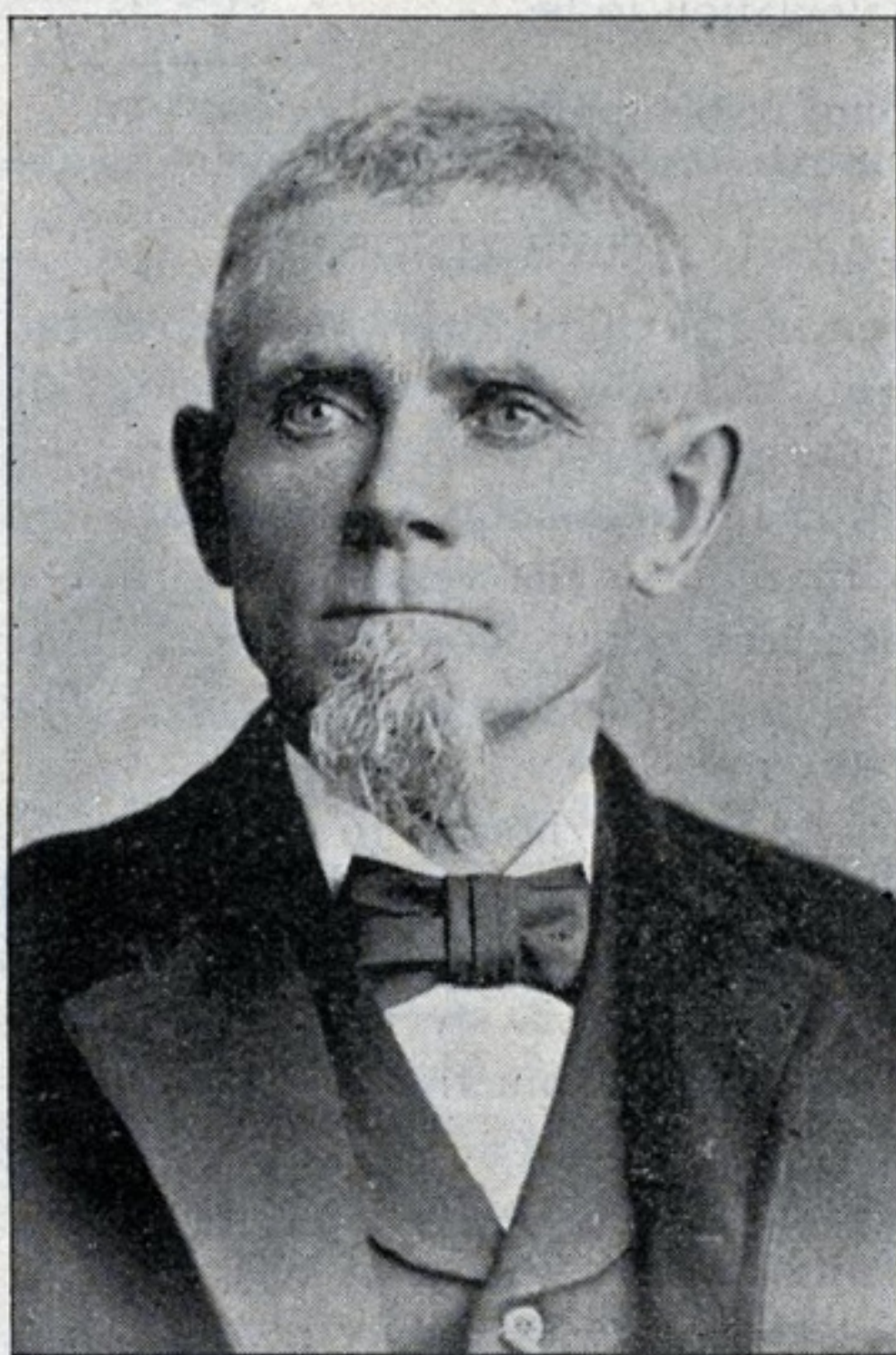
An abandonment of a wrecked vessel by the owner, after an attempt to raise it has proved unavailing does not relieve the owner from liability to pay men employed in such attempt.

4. Admiralty—Jurisdiction of Action for Wreckers' Wages—Maritime Contract.

A contract to raise a wrecked vessel is sufficiently maritime in its nature to give a court of admiralty jurisdiction of a suit to recover wages due under it.

Libel by Frank W. Gilchrist against Annetta S. Godman and others.

GROSSCUP, District Judge (orally). The libel is for services in connection with an attempt to save the schooner American Union, stranded about May 6, 1894, at Thompson's Harbor, on Lake Huron. The vessel was at the time of the stranding owned by the respondent Annetta S. Godman, and insured for about two-thirds its value in the respondent insurance companies. The master of the vessel at the time was James P. Godman. When the vessel stranded, her master employed the libelants to come to her assistance with tugs, pumps, hawsers, lights, and other wrecking appliances calculated to take her off the beach. The libelants entered upon this undertaking, and continued therein until about the 18th of May, when it was supposed that the vessel had been saved. On the 19th a fresh wind came up, which had the effect of pound-



(THE LATE) JAMES P. GODMAN.

(See issue July 1.)

ing her to pieces upon the shore, leaving no salvage, except a few chains and other like things, not amounting to over \$300 in value. While the libelants were engaged in their work, under employment of the master, an agent of the underwriters was sent on their behalf to assist in the work. He came on the 13th of May, and remained for several days thereafter, participating actively in the superintendence of the work, giving directions and approving what the master had already done. After the 19th of May, and when it was known that the vessel was totally lost, the owner served upon the underwriters notice of her total abandonment of the vessel.

It will be observed that the relation of the libelants to the vessel in distress was not that of salvors at large. They did not offer their help or impose their services. They were called from a distant port by the master and entered upon their work in pursuance of that call. Their claim for services, had the vessel been saved, could not, under the terms of the employment and the customs on Lake Michigan, have been based upon any idea of a proportionate interest in the value of the vessel, growing out of their having been her salvors. Their relation was not that of men coming at a venture to a vessel in distress, but of regular wreckers and tug men who work for certain customary compensation to give assistance. In my judgment, no feature of salvors at large enters into this case, but it brings, rather, the claim of a class of men who work for certain customary wages; and this, independently of the success or failure of their efforts. It is plain, then, that the men employed under such circumstances are entitled to wages from their employer independently of the outcome of their labor, such labor having been reasonably and faithfully performed in pursuance of the engagement.

Who were their employers? Undoubtedly the master of the vessel was one, who also by that act, as between

her and the employed, bound the owner. I am of the opinion, also, that the underwriters, in view of their large interest in the work of the libelants, and by sending Capt. Sinclair to the scene of the work to participate, and to some extent, superintend the same, intended to avail themselves of this employment. Their acts in this connection were, in effect, an adoption or ratification of the master's engagement with these libelants. Indeed, it is inconceivable that, if the master had not already engaged these men, the underwriters, through their agents, would not have done so. They undoubtedly intended to join with the master in these efforts to save the vessel; their pecuniary interests and their conduct were all in that direction. I hold, therefore, that the libelants were the employees jointly of the owner and the underwriters, in this effort to save their common property.

I hold also that the so-called abandonment of the vessel, after she was already lost, does not have the effect of exempting the owner from her just share of liability for this employment. A proceeding so completely after the fact cannot affect the relative liabilities of the parties with relation to an effort intended to avoid that fact. Had the vessel been saved, or partially saved, there would, of course, have been no attempt at abandonment. To allow it now, as against these libelants, would be giving the owner the unfair option of choosing to pay her proportionate shares if the service were successful, and escaping when she found they were unsuccessful.

The limitation act is not, in my judgment, in question in this case. Vessel owners and underwriters, employing men to save their vessels in extremity, make themselves, by such act of employment, liable to the extent of the contract price; and I think the contract sufficiently maritime in its nature, aided, as it is, by the statutes of the state wherein the services were rendered, to create a maritime action that would bring it within the jurisdiction of a court of admiralty. A decree may be entered finding for the libelants, and against the libelees, one-third of the liability against the owner, the other two-thirds against the underwriters, in proportion to their interests in the vessel.

THE "SOO" AND SUEZ.

The following is an extract from a paper read by Mr. Joseph R. Oldham, N.A. & M.E., Cleveland, on "The Computation of Register Tonnage":

"I trust, gentlemen, I may not be suspected of lacking in patriotism if I endeavor to show you the true comparative state of the Soo and Suez Canal traffic with regard to the tonnage of shipping engaged in these trades. So that you may more readily make a comparison between these trades I have drawn curves to a common scale illustrative of the tonnage passing the two great waterways. I also show in sombre lines the condition of our tonnage engaged in the foreign trade. Now, it is a melancholy fact that we have not one single steamer engaged in the Suez Canal trade, therefore this comparison resolves itself, I am sorry to say, into one between the American ship tonnage passing the Sault Ste. Marie and the tonnage of other nations passing Suez. The time required for making the average voyage through the Suez Canal is about twelve times as much as the time occupied over an average voyage through the St. Mary's Canal. Therefore, in estimating the tonnage engaged in these trades time should be taken into account. The distance from Alexandria to Aden will be about the same as from Buffalo to Duluth. Now the ordinary Suez Canal trader could make ten trips from Alexandria to Aden in about the same time as it takes her to steam from London to Hong Kong, but the time required for loading and unloading is much greater in the foreign trade. If the detention in port were the same as on these waters the Suez Canal traders could make twelve trips between Aden and Alexandria in the same time as they now require to make an actual average voyage. So that their tonnage passing that point would then be twelve-fold of what it now is, and if last year's experience through the Asiatic waterway be multiplied by twelve it represents a Suez Canal trade of over 100,000,000 tons per annum, or say 67,000,000 tons for two-thirds of a year. There are about 2,500,000 tons of shipping engaged in the Suez Canal trade, we have not quite 400,000 tons in the Soo trade. The average tonnage of a Suez Canal steamer is 2,460 tons, of a St. Mary's Falls steamer 927 tons. This is not intended to detract in the slightest degree from the fact that over sixteen million tons of cargo were handled and transported through St. Mary's River and Canal Locks in 232 working days. The feat is phenomenal and has never before been equaled in the world's history—and perhaps no other canal could pass so much tonnage in the same time. I only wish to make it clear that though we possess many of the finest steamers in the world our tonnage is not enormous; indeed the aggregate capacity of three or four European steamship lines engaged in the Suez Canal trade exceed in value and number the total iron and steel tonnage afloat on our lakes.

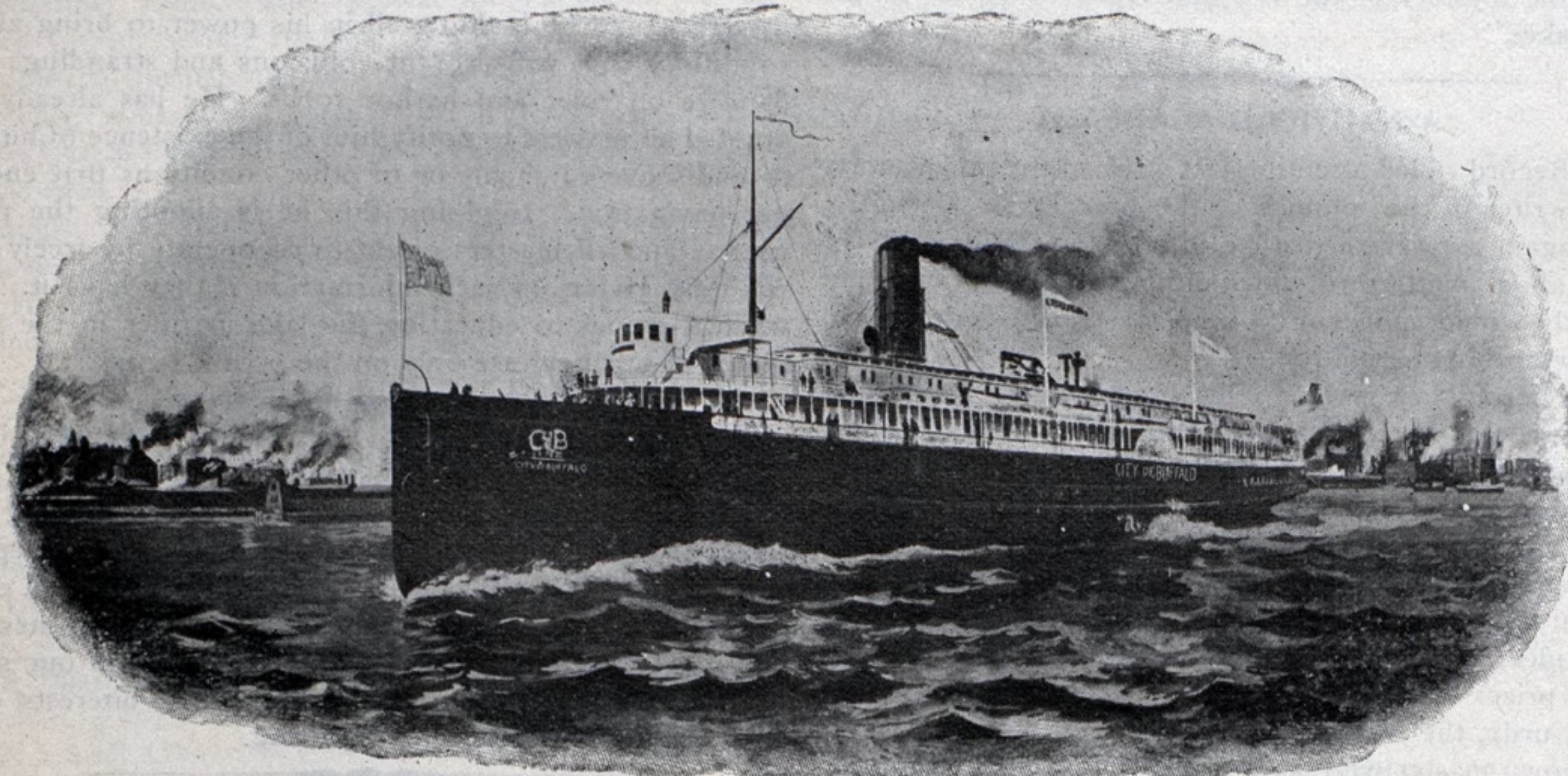
The Hydrographic Office, Navy Department, Washington, D. C., issues this week a new chart of Lake St. Clair and St. Clair and Detroit Rivers. The survey between Bar Point and Mamajuda light-house was made by officers of the U. S. S. Michigan in 1894. Taken as a whole the chart is one of the best and clearest delineations on a large scale, which we have ever seen. Price \$1.00.

FROM 'FRISCO.

Captain Pattman, of the Loch Torridon, woke up shipping circles by his smart passage of 46 days from Newcastle, N. S. W., to San Francisco, coal laden. He also stirred up memories, which, backed by scrap-book clipping and old records, give new light on the subject of fast passages. Captain H. H. Watson, now surveyor for the American Record at this port, back in 1861, made the run in the Flying Dragon, from Sydney to Hampton Roads, in 62 days, beating the English mail boats, via the

ment in the Court below. Lords Trayner and Moncrieff held that where there was a well established rule of law in England and no existing law in Scotland with which the English law conflicted, it was desirable that the same rule should be followed in Scotland, so that conflicting rules might not prevail in different parts of the same country. The English practice has long been to base judgment on the state of circumstances existing at the time legal action is commenced. If the owners of the Blairmore had issued writs against their underwriters when their ship

which all vegetation in Egypt depends. The northern end stood seventeen feet above low Nile, while at the southern end it was at an equal elevation with the river. Through this cut ran a perennial stream, which watered a province named the Fayoum, endowing it with fertility and supporting a large population. In the time of the annual flood a great part of the canal was under water, and then the river's current would rush in a more direct course into the pass, carrying with it the rich silt which takes the place of manure and keeps the soil in a constant state of productiveness. All this, with the exception of the tradition that Joseph built it, can be verified today, and it is not mere supposition or rumor. Until eight years ago it was firmly believed that the design has always been limited to an irrigation scheme, larger, no doubt, than that now in operation, as shown by the traces of abandoned canals, and by the slow aggregation of waste water which had accumulated in the Birket el Querum, but still essentially the same in character. Many accounts have been written by Greek and Roman historians, such as Herodotus, Strabo, Mutianus, and Pliny, and repeated in monkish legends, or portrayed in the maps of the middle ages, which agreed with the folk lore of the district. These tales explained that the canal dug by the ancient Israelite served to carry the surplus waters of the Nile into an extensive lake lying south of the Fayoum, and so large that it not only modified the climate, tempering the arid winds of the desert and converting them into the balmy airs which nourished the vines and the olives into a fullness and fragrance unknown in any part of the country, but also added to the food supply of the land such immense quantities of fish that the royal prerogative of the right of piscary at the great weir was valued at £250,000 annually. This lake was said to be 450 miles round, and to be navigated by a fleet of vessels, and the whole circumference was the scene of industry and prosperity.—Engineering.



PASSENGER STEAMER CITY OF BUFFALO.

On the Cleveland-Buffalo route, timed to have made the best speed ever run on Lake Erie, viz., 22.58 miles per hour, between Cleveland and Put-in-Bay, on June 26.

Red Sea, by three days. Coming to this port he was chartered by the late Isaac Friedlander to load wheat to Melbourne, where he arrived in 43 days, carrying with him the news of the Battle of Bull Run. Shifting to Sydney, he loaded coal for this port, arriving here in February, 1862, just 42 days to port. Under charge of a pilot the ship was run on Arch Rock and wrecked.

The late Captain J. N. Knowles, in the Glory of the Seas, made a record of 35 days from here to Sydney, loaded.

Captain J. F. Chapman, in the St. John, made the round from this port to Sydney and back, in four months and two days with a full cargo each way. The above shows the old Yankee clippers still bear the palm of speed.

Good passages from Australia have been talked about ever since the arrival of the Loch Torridon, which reached here in May, breaking the record to Eastward from Newcastle, N. S. W. That incident brought to Captain Julian Brock, now in the service of the Harbor Commissioners, the fact that in 1873 the brig Firefly, 200 tons, was sold by her owner, a Captain Chapman, then well known here, to a firm in Melbourne. Captain Brock was appointed commander, and thirty-eight days after he left the tug off the Golden Gate, the Firefly was off Port Phillip Heads. The consignees could scarcely believe that Captain Brock was master of the Firefly and was actually in Melbourne. She was not expected for a fortnight.—Weekly Commercial News.

SHIPOWNERS TOO SLOW.

The Blairmore case has again come up in the Scotch Courts on appeal, says Fairplay. The vessel, when lying at San Francisco on the 9th of April, 1896, was capsized by a squall and sank. She was insured for £15,000 on a time policy, and the owners tendered notice of abandonment and claimed a constructive total loss. As usual, the notice was declined by the underwriters, and the owners omitted there and then to commence legal action against them. At the time the vessel was an absolute loss, and a fortiori a constructive total loss, and an action commenced under those circumstances would have placed the owners in a commanding position. As it was, the underwriters got the ship raised at an expense of £7,600, were prepared to pay that sum and the cost of what repairs might be necessary, and contended that there was not a constructive loss.

Subsequently the owners took action, which was dismissed by Lord Kinloch, in the Outer House, on the ground that it was irrelevant, as founding a claim under the policy for a total loss. The owners then appealed to the Second Division, which has just confirmed the judg-

ment in the Court below. Lords Trayner and Moncrieff held that where there was a well established rule of law in England and no existing law in Scotland with which the English law conflicted, it was desirable that the same rule should be followed in Scotland, so that conflicting rules might not prevail in different parts of the same country. The English practice has long been to base judgment on the state of circumstances existing at the time legal action is commenced. If the owners of the Blairmore had issued writs against their underwriters when their ship

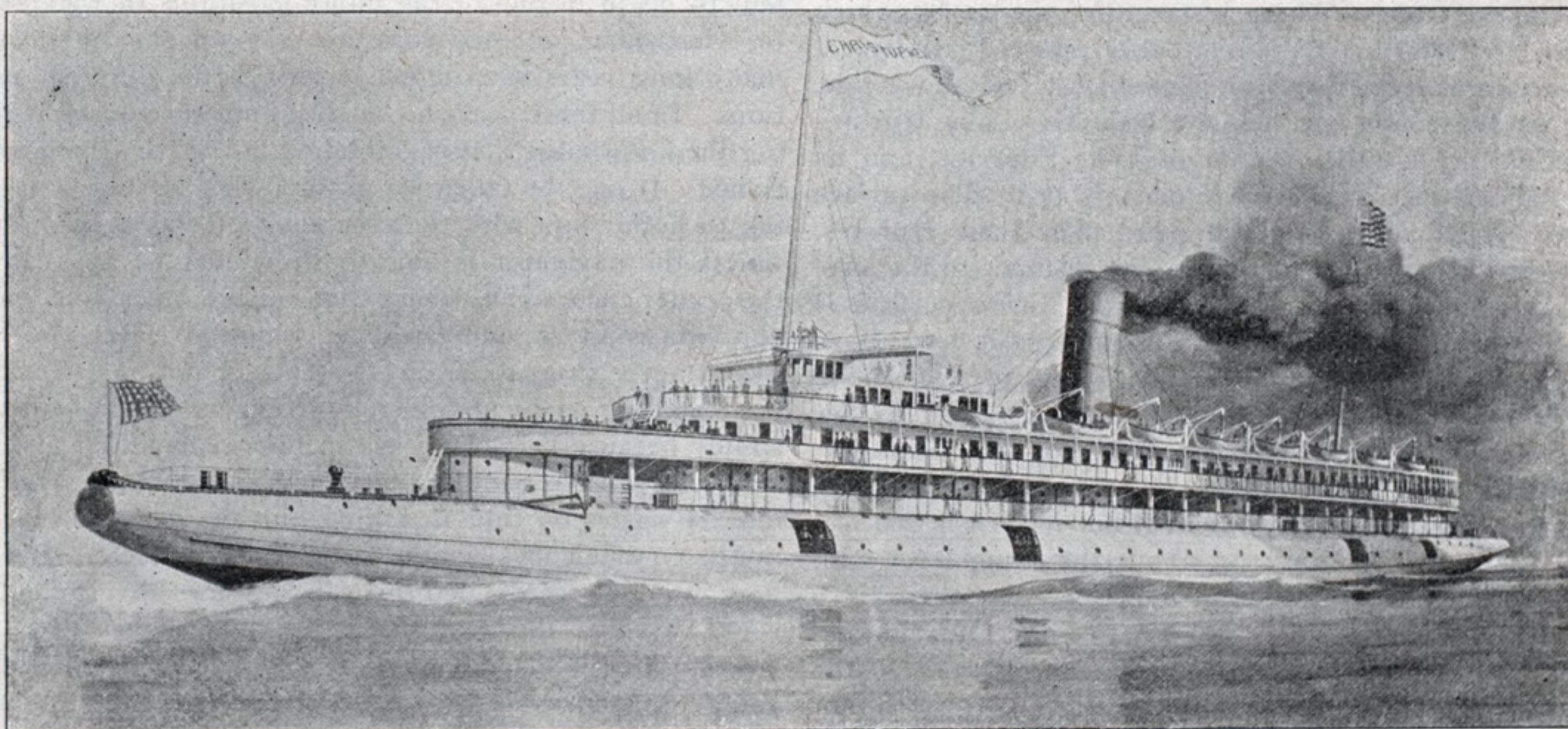
THE CANAL OF JOSEPH.

How many of the engineering works of the nineteenth century will there be in existence in the year 6000? Very few, we fear, and still less those that will continue in that far off age to serve a useful purpose. Yet there is, at least, one great undertaking conceived and executed by an engineer which during the space of four thousand years has never ceased its office, on which the life of a fertile province absolutely depends today. We refer to the Bahr Joussuf—the canal of Joseph—built, according to tradition, by the son of Jacob, and which constitutes not the

INVENTOR OF THE MULTITUBULAR BOILER.

In an address made at the twenty-fifth anniversary of the Stevens Institute of Technology, the Hon. Abram S. Hewitt made the statement that John Stevens, of Hoboken, was the first engineer to build a Watt condensing engine on the American continent. The engine was built at Belleville, N. J., a small village on the Passaic River. It was put into a boat, to which a stern wheel was applied, and the boat was run from Belleville down the Passaic by Newark, out into Newark Bay, and thence to New York. This was several years before Fulton began his experiments in applying steam to the propulsion of vessels.

It is not generally known that this same John Stevens



THE WHALEBACK STEAMER CHRISTOPHER COLUMBUS.

Built by the American Steel Barge Co., West Superior, Wis. Carried over 5,700 passengers on one trip, and this week carried about 10,000 passengers between Chicago and Milwaukee in three days. Her dimensions are 362 feet in length, 42 feet beam, and 24 feet depth of hold. Engines, triple expansion. Boilers, 6 of the Scotch type and corrugated furnaces.

least of the many blessings he conferred on Egypt during the years of his prosperous rule. This canal took its rise from the Nile at Asiut, and ran almost parallel with it for nearly two hundred and fifty miles, creeping along under the western cliffs of the Nile valley, with many a bend and winding, until at length it gained an eminence, as compared with the river bed, which enabled it to turn westward through a narrow pass and enter a district which was otherwise shut off from the fertilizing floods on

patented the multitubular boiler in 1803. That form of boiler was what was wanting in the earliest form of British locomotives, and its introduction by the Stephenson was the most important means of making the "Rocket" beat its competitors. In Europe the invention of the tubular boiler is generally credited to a French engineer and sometimes to an official of the Liverpool & Manchester Railroad, named Booth, who suggested to George Stephenson that he use that form of boiler.



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A SUBMARINE INFLOW.

The Record has all along held to the opinion that a surface watershed did not account for the fluctuation of lake levels. According to the late General O. M. Poe, precipitation alone ruled the level of the leaks and so much we are willing to grant, but, the supply may not be from the surface, rather, are we disposed to believe that close soundings and a thorough survey would show that submarine springs, wells or actual rivers exist at the bed of the lakes. This supply is from the precipitation over the watershed tributary to the lake region, but the point is, that it is not a surface flow.

In this connection the New York Sun says this week in quoting a recent interview:

"I believe there is a subterranean river running from Lake Superior through Lakes Huron and Michigan, under Lake Erie, and emptying into Lake Ontario," said a man from up the state. "There is no other theory by which certain mysteries of the great lakes may be explained. The surface of Lake Superior is about 650 feet above tide, while its bed is 260 feet below tide level. Lake Huron's surface is fifty feet below that of Lake Superior, and its bed is about on a level with Superior's bed. The surface of Lake Michigan is 300 feet lower than Lake Huron's, and its bed is sunk to a corresponding distance to the level of Lakes Superior and Huron. Lake Erie's surface is nearly as high as Lake Michigan's, being 565 feet above tide, but its bed is also above tide, being 350 feet above the ocean level, consequently its bed is 250 feet higher than the beds of Lakes Michigan, Huron and Superior. The surface of Lake Ontario is the lowest of all the lakes, being less than 500 feet above tide, but its bed is 260 feet below the ocean level, or on about the same level with Lakes Michigan, Huron and Superior. So there is a continuous fall from Lake Superior to Lake Ontario, and all the known outlet that the upper lakes have is in the comparatively insignificant Detroit River. It does not seem within the bounds of physical possibility that Detroit River could dispose of all that great volume of water from above, or its banks withstand the enormous pressure of that immense volume, and the theory of the existence of that stream is a necessity. All the St. Lawrence River fishes are found in every one of the great lakes except Lake Erie. Why? Because they follow the course of the subterranean river, passing 300 feet beneath the bottom of Lake Erie, and enter the waters of Lake Michigan, thence to be distributed to the other lakes above it.

"The lakes above Lake Erie have frequent but irregular flux and reflux of their waters, corresponding with ocean tides. What is the explanation of the mystery of those erratic lake tides? Simply, according to my opin-

ion, that the subterranean river becomes occasionally obstructed by great obstacles that are constantly separated from the lake bottoms and moved down. Then that supplementary outlet for the great volume of water above for the time becomes useless, and the other only outlet, Detroit River, being insufficient for the purpose, the waters are dammed back, and the lakes rise. At last the underground obstructions are swept away by the irresistible pressure, the subterranean river flows naturally once more, and the dammed waters of the upper lakes subside. That is the whole mystery of the rise and fall of the tides in the great lakes."

A NAUTICAL ACADEMY.

The Record called attention last week to the idiosyncrasy of the writer in the columns of the Free Press, Detroit.

We again asseverate that he is a whole whale, talks or writes about matters of which he is totally ignorant and evidently would endeavor to keep the marine fraternity in a know-nothing condition.

We referred last week to his long-winded, misleading scribbling and here comes another, every line of which could with justice be contradicted.

"Though it is claimed that the Wilson school for education in navigation has had as pupils 'twenty-five captains and mates who have grown gray in the service,' it is a fact that the owners and captains of this port take no stock in the idea, and that they scoff at the notion of offering money prizes for the best-schooled graduates, as George L. McCurdy, the insurance man, proposes doing. Said a well-known master who spent half a day in port yesterday.

"This Chicago school was established by an officer of the hydrographic office, and at the suggestion of C. D. Sigsbee, in charge of the hydrographic office in Chicago. It is proposed to teach lake mariners the science of navigation, which means the ability to figure out a ship's position by solar observations. Now, the matter of latitude and longitude has no part in the navigation of the lakes. Instead, an intimate knowledge of the rivers, their peculiarities, currents, bends, different widths, shoals, bowlder clusters, the various courses necessary to clear all lake shore dangers and at the same time not cost the vessel loss of time by running her too far out; the position, formation and depth of harbors, width of piers; the rules of the road, the ability to distinguish red from green; the ability to get out of a vessel all the speed that is in her consistent with fuel economy—these and a few other qualifications are what the lake owner demands of the man he has placed in charge of his vessel.

"For the last eighty years or more this has been the condition of things on the lakes. The master has been content to begin in one of the minor positions of watchman, or wheelsman, and to work his way up slowly through many long years of arduous service in the different positions. In all these years he has been unconsciously acquiring the knowledge that is embodied in the list I have mentioned. It may be taken for granted that no owner is going to honor him with the command of one of his vessels unless the navigator is able to show that he has had all this experience, for nowhere than on the lakes is a longer apprenticeship as understrapper required. But the lake owner never stops to inquire whether or not he can handle a sextant or work up difficult problems in mathematics, simply because it is of no use to him in handling a vessel from one port to another. The supervising inspector of his district wastes no time in asking him the definition of azimuth, co-efficiency, zenith, tangent, secant, etc. But he does want to know, before he issues the government license, whether the applicant is all right in his eyes, and whether he can shape courses here and there on the different lakes, and for his knowledge of the pilot rules and sundry other things peculiar to the lakes. When he has satisfied himself that the applicant is all right, then, and not till then, will the inspector give him the sheet of paper that allows him to command vessels or act as pilot or mate on the lakes.

"Once in a great while you will hear the excuse given by the man on watch for stranding his vessel in a fog, that he thought he was further out in the lake, or several miles back or ahead of the point at which he went on. This is no excuse at all. He should have his log, and, knowing the speed of the boat, he would be able to tell his position when he entered the fog. As to his ignorance that he was so close to shore—he would have been enlightened fully had he not criminally neglected the heaving of the

lead. No, it makes no difference whether or no a defective compass sent him ashore. It is his duty, in a fog, to go at a very slow speed, and to keep that lead going. This will always prevent stranding.

"It is strange that, old as is navigation on the lakes, no attention should be paid to the ocean method of navigation till this late day, for the school was only established a year before last winter. Mr. McCurdy no doubt means well when he offers these prizes. He is the senior member of a firm of agents that represents many of the London insurers in placing and maintaining insurance on the lakes, and he is doing all in his power to bring about conditions that will prevent collisions and strandings and damage on river and harbor rocks. He has already requested all masters to notify him of the existence of hitherto undiscovered shoals or of other conditions that endanger navigation. In doing this he is adopting the right course, and all masters ought to co-operate by freely and willingly giving up such information if they have it. But when it comes to educating the lake mariner in the style that is of practical use only on the ocean, I pass."

Capt. W. S. Schley, U. S. N., Chairman of the Light-House Board, asks for proposals for furnishing the materials and labor of all kinds necessary for rebuilding and repairing the light-house tender Holly. The Department also advertises for bids for the construction of a composite built light vessel. In these rather slack times the more of this special work that can be placed in our shipyards the better it is for the many varied interests concerned in shipbuilding and repairing.

LAKE FREIGHT REPORT.

There is practically no change in the freight market from a week ago. Chicago is somewhat weaker on account of the Fourth of July holidays embracing as it did Saturday, which is only half a day any time and then Sunday came on with the actual celebration on Monday, which made a three-day vacation.

Ore, grain, coal and lumber are as quoted last week and while we can judge of a nearby and general improvement in lake freights, it is conditional upon the industrial demand which is at present picking up.

The future of lake freights is anyone's guess, they may and are likely to go up, but to what extent is questionable.

Practically, all lake tonnage is now chartered, but we must admit that charters are made on a non-paying basis and simply to keep the tonnage employed instead of rotting or rusting at the docks.

EDUCATION NEGLECTED.

Boston, Mass., July 6, 1897.

Editor Marine Record:

Relative to your recently editorial in the Record of July 1, I think that your religious training as a boy must have been totally neglected, for in your attempt to quote Scripture you positively misquote it. The quotation rendered as it should be is as follows: "Tell it not in Gath, publish it not in the streets of Askelon," II. Sam. 1:20.

I think when newspaper men attempt to handle Scriptural phrases they ought to consider themselves nearly right, but it would appear as if you had not even taken the time to look up the text.

It is simply obnoxious for me to see terms misquoted and more especially so when they relate to Scripture.

Yours truly,

A DIVINE.

NEW TONNAGE.

The Bureau of Navigation, Treasury Department, sends us this week a list of twenty-three vessels, among which is the lake-built schooner Polynesia, of the Corrigan fleet, recently launched at Cleveland.

Taking the other twenty-two in account, the Cleveland boat of 3,562 tons, will carry more cargo than all others registered for the week ending June 26, 1897.

Evidently the lakes still lead in building and as we regularly state is the backbone of American tonnage.

VESSELS CLASSED.

The American Shipmasters' Association have classed or rated in the Record of American and Foreign Shipping a large number of vessels during the past week. The strictly American classification society is the Record and their rating goes from end to end of the world.

MARINE HOSPITAL SERVICE.

Walter Wyman, supervising surgeon-general U. S. Marine Hospital Service, with the approval of O. L. Spaulding, acting secretary of the Treasury, has made the following contracts for the care of seamen entitled to relief from the service up till June 30, 1898:

Ashland, Wis.—St. Joseph's Hospital to furnish quarters, subsistence, nursing, medical attendance, and medicines, at 87 cents a day; contagious diseases, \$1 a day, and to provide for the burial of deceased patients, at \$9 each.

Ashtabula, Ohio.—The medical attendance to be furnished by an Acting Assistant Surgeon; Mrs. Henry Whelpley to furnish quarters, subsistence, and nursing, at \$1 a day; contagious diseases, \$1.50 a day; Gregory & Burwell to provide for the burial of deceased patients, at \$11.50 each.

Buffalo, N. Y.—The medical attendance to be furnished by a medical officer of the Marine Hospital Service; Buffalo Hospital (Sisters of Charity) to furnish quarters, subsistence, nursing and medicines, at 80 cents a day; contagious diseases, at \$2 a day; and to provide for the burial of deceased patients, at \$10 each.

Chicago, Ill.—Hospital patients to be cared for in the United States Marine Hospital; Bartlett & Co. to provide for the burial of deceased patients, at \$15.50 each.

Cincinnati, Ohio.—Hospital patients to be cared for in the United States Marine Hospital; dispensary at the hospital, southeast corner of Third and Kilgour streets; Edward Busse & Co. to provide for the burial of deceased patients, at \$13 each.

Cleveland, Ohio.—Hospital patients to be cared for in the United States Marine Hospital; Flynn, Abel & Froelk to furnish ambulance service, at \$1.50 for each patient, and United States Marine Hospital; out patients to be treated to provide for the burial of deceased patients, at \$14 each.

Detroit, Mich.—Hospital patients to be cared for in the dispensary, No. 90 Griswold street; J. W. Maney & Co. to provide for the burial of deceased patients, at \$9 each.

Duluth, Minn.—The medical attendance to be furnished by an Acting Assistant Surgeon; St. Luke's Hospital to furnish quarters, subsistence, nursing, and medicines, at 75 cents a day; John W. Stewart to provide for the burial of deceased patients, at \$15 each.

Grand Haven, Mich.—Medical attendance by an Acting Assistant Surgeon; Anna Farnham to furnish quarters, subsistence and nursing, at \$1 a day. James Barns to provide for the burial of deceased patients, at \$15 each.

Erie, Pa.—The medical attendance to be furnished by an Acting Assistant Surgeon; Hamot Hospital Association to furnish quarters, subsistence, nursing, and medicines, at 71 cents a day. Care and treatment of cases of contagious diseases to be furnished by the Health Department of the city of Erie, at \$2.85 a day; V. Heidt to provide for the burial of deceased patients, at \$15 each.

Escanaba, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; Delta County Hospital to furnish quarters, subsistence, and nursing, at 86 cents a day.

Sturgeon Bay, Wis.—The medical attendance to be furnished by an Acting Assistant Surgeon.

Superior, Wis.—The medical attendance to be furnished by an Acting Assistant Surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents a day; Patrick O'Reilly to provide for the burial of deceased patients, at \$15 each.

Ogdensburg, N. Y.—The medical attendance to be furnished by an Acting Assistant Surgeon; City Hospital to furnish quarters, subsistence, nursing and medicines, at \$1 a day; the city of Ogdensburg to care for contagious cases, at \$3 a day; Nuttall & Murphy to provide for the burial of deceased patients, at \$9.23 each.

Oswego, N. Y.—The medical attendance to be furnished by an Acting Assistant Surgeon; Oswego Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 a day; John F. Dain & Son to provide for the burial of deceased patients, at \$15 each.

Sandusky, Ohio.—The medical attendance to be furnished by an Acting Assistant Surgeon; Good Samaritan Hospital to furnish quarters, subsistence, and nursing, at \$1 a day; and to provide for the burial of deceased patients, at \$15 each.

Port Huron, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; Port Huron Hospital and Home to furnish quarters, subsistence, and nursing, at \$1 a day; J. W. Kelly to provide for the burial of deceased patient, at \$8 each.

Manistee, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; Mercy Hospital to furnish quarters, subsistence, nursing, and medicines, at 90 cents a day; Switzer & Merkle to provide for the burial of deceased patients, at \$11 each.

Ludington, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; Mrs. H. D. Linsley to furnish quarters, subsistence, and nursing, at 80 cents a day.

Toledo, Ohio.—The medical attendance to be furnished by an Acting Assistant Surgeon; St. Vincent's Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents a day; contagious diseases, at \$2 a day, and to provide for the burial of deceased patients, at \$15 each.

Sault Ste. Marie, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; Mrs. Annie Little to furnish quarters, subsistence, and nursing, at \$1 a day; J. Vanderhook to provide for the burial of deceased patients, at \$15 each.

Milwaukee, Wis.—The medical attendance to be furnished by an Acting Assistant Surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at 80 cents a day; George L. Thomas to provide for the burial of deceased patients, at \$14 each.

Marquette, Mich.—The medical attendance to be furnished by an Acting Assistant Surgeon; St. Mary's Hospital to furnish quarters, subsistence, nursing, and medicines, at \$1 a day, and to provide for the burial of deceased patients, at \$15 each.

EASTERN FREIGHT REPORT.

The anticipated advance of freight for grain cargoes to Cork f. o. b. from range of ports has taken place, and we can today quote 2s 9d@3s as applicable to this business from date to well into August. Berth freights have likewise improved, although in less proportion than those for smaller entire cargoes, and large vessels can now obtain from 2s 3d@2s 4½d to picked ports. Owing to absence of pressure of open tonnage on the market, the decline latterly prevailing for deal and timber freights has been checked, and these freights have assumed a slightly advancing tendency. General business, apart the trades named, has been light, and the enquiry for boats limited; some demand still existing for berth boats to the far East hangs fire, owing to the unyielding attitude of owners of suitable tonnage.

This week closes again on a very quiet market for sail tonnage, but owing to continued light offerings, rates remain very firm, and any increased demand could scarcely fail to produce a moderate advance.

A LARGE TUG

A dispatch from Bay City announces that F. W. Wheeler & Co. have secured a contract for the construction of the largest ocean tug in the world. Brown & Co., of Pittsburgh, are to be the owners.

The plans and specifications are being made out at the company's office in that city, and will be completed in that city, and will be completed in a short time. The tug will be 156 feet long, or eleven feet longer than the ocean tug which Wheeler & Co. are building for W. G. Wilmot, of New Orleans. The beam, engines, and general specifications for the new craft will be about the same as those of the Wilmot tug, recently illustrated in the columns of the Marine Record, but the hold will be six inches deeper.

The new tug will be used in the coast trade about the Gulf of Mexico, and will be constructed sufficiently strong to cross the Atlantic when desired. The measurements of the new boat will make her the largest in the world, with the Wilmot tug the second in size.

The keel of the new contract will be laid as soon as sufficient material arrives to keep a force of men employed.

Wheeler & Co. have already sent orders for the material, and it will begin arriving in about two weeks from the Carnegie Iron Works.

With the addition of this contract to the work already at the yard, the plant will soon be in full operation, and a large force of men will find employment for some time.

A Legal Dilemma.—"Who own's the mule?" "Plase yer haner, I owns wan half of 'im, and Tim Fogarty owns the other half." "Then what's the trouble?" "It's just this, yer haner, that Fogarty won't let his half work." "Ah, that's a nice point; I adjourn the court—I must look up the law."

AN OCEAN EXPERIENCE.

The following communication has just been received:

Portland, Oregon, June 23, 1897.

To the Commercial News, San Francisco.—Dear Sir:—Will you please give in your columns the particulars of the passage of the Balaklava, from London to San Francisco in 1888? I believe she arrived on June 5, 1888, after a 439-day passage. Thanking you in anticipation, I am,

Yours very truly,

JAMES LAIDLAW.

From a detailed account published when the vessel arrived here, the following extracts are made: The ship arrived June 5, 1888, as above stated, and was placed in quarantine. She was 436 days on the voyage.

Sailed from Tilbury dock March 25, 1887, 4 in the afternoon.

Passed Beachy Head Saturday, March 26th, at 10 in the morning.

Tuesday, July 5th—103 days out; off Cape Horn; heavy gales; weather very cold; several of the crew frost-bitten and unable to work; ship laboring very heavily and land-yards and iron-work carried away daily.

Wednesday, July 27th—124 days out, lat. 47 20 S., lon. 79 W., blowing a hurricane; noon wore ship to SW.; wind West, with a terrible sea.

10 p. m.—The ship was dismasted, the mainmast breaking pumps, winches, mast, combings, deck plates and fourteen deck planks, making a great hole in the ship's deck, through which a large quantity of water went down into the hold; the ship is settling fast; the heavy weather continued all night and all day Thursday; heaving cargo overboard and trying to stop hole in the deck, but find it impossible, and the ship is full of water; the crew are more or less disabled, my own leg being broken.

4 p. m., Thursday, July 20th—Launched the lifeboats, intending to lay by the ship until she foundered or the gale moderated.

5 p. m.—No. 1 lifeboat got adrift with sail-maker and an able-bodied seaman.

5:30 p. m.—No. 2 lifeboat was stove to pieces and ten men drowned, including the mate, carpenter, cook and one apprentice, the rest able-bodied seamen; the second mate went mad and one of the sailors has gone wrong in the head; God help us! how will this end?

Saturday, July 30th, 127 days out—Have got hole in the deck partially stopped; seven feet of water in the ship; heaving cargo overboard and bailing water; crew most contemptible cowards; it is impossible for a man to look at them without feeling the utmost contempt.

From Monday, August 1st, to Saturday, August 20th, the ship was drifting about the ocean a complete wreck; crew employed bailing water all the time and heaving cargo overboard to lighten the ship.

Saturday, August 25th, lat. 45 S., lon. 76 W., the first fine day we have had since the ship was dismasted; stepped a jury-mast and cast loose from the drift anchor.

Sunday and Monday, August 21st and 22d, off Hamline Island; heavy gale from NNW.; had to wear ship and stand to SW.; our sails are now all in rags and pieces, nothing more left except two old spankers and two jibs, the remainder having been used to stop the hole in the deck.

Friday, August 26th, still off Hamline Island and still blowing a heavy gale.

Saturday, August 27th—Off the Island of Huapo; still blowing a gale, with heavy hail squalls.

Sunday, August 28th—Came to anchor in a small bay—an island bearing SE.; distance about twenty-two miles; looking for inhabitants.

On the 31st of August found the town of Guillon, where I reported the ship to the captain of the port; was ordered to engage ten seamen; one interpreter and a pilot and proceed to Ancud; secured a steamr at Chousy, and on September 14th anchored four miles off Ancud.

The log then details Capt. Palmer's trip to Valparaiso and return with a surveyor to fit out the ship; the ship lay at Ancud fitting out until the 26th of January of the present year, when she sailed for Valparaiso, arriving there on February 5th.

Thursday, March 22d, sailed for San Francisco.

In his entry of May 25th, he says: "From the 19th to the 25th of May we have averaged about ten miles per day; nothing but calms, calms every day; when is this miserable passage to end? surely we are going to have a change soon."

The last entry in the log was made as the unfortunate ship entered the harbor, seventy-six days from Valparaiso, and ends with "Thank God!"

H. C. BURRELL,

Marine Reporter.

We can Supply Men and Officers to Passing Vessels

BOAT ON THE RIVER
AT ALL HOURS,
NIGHT OR DAY.Signal: One long
two short.Our boats are
white. We'll treat
you white and deal
with you

ON THE SQUARE.

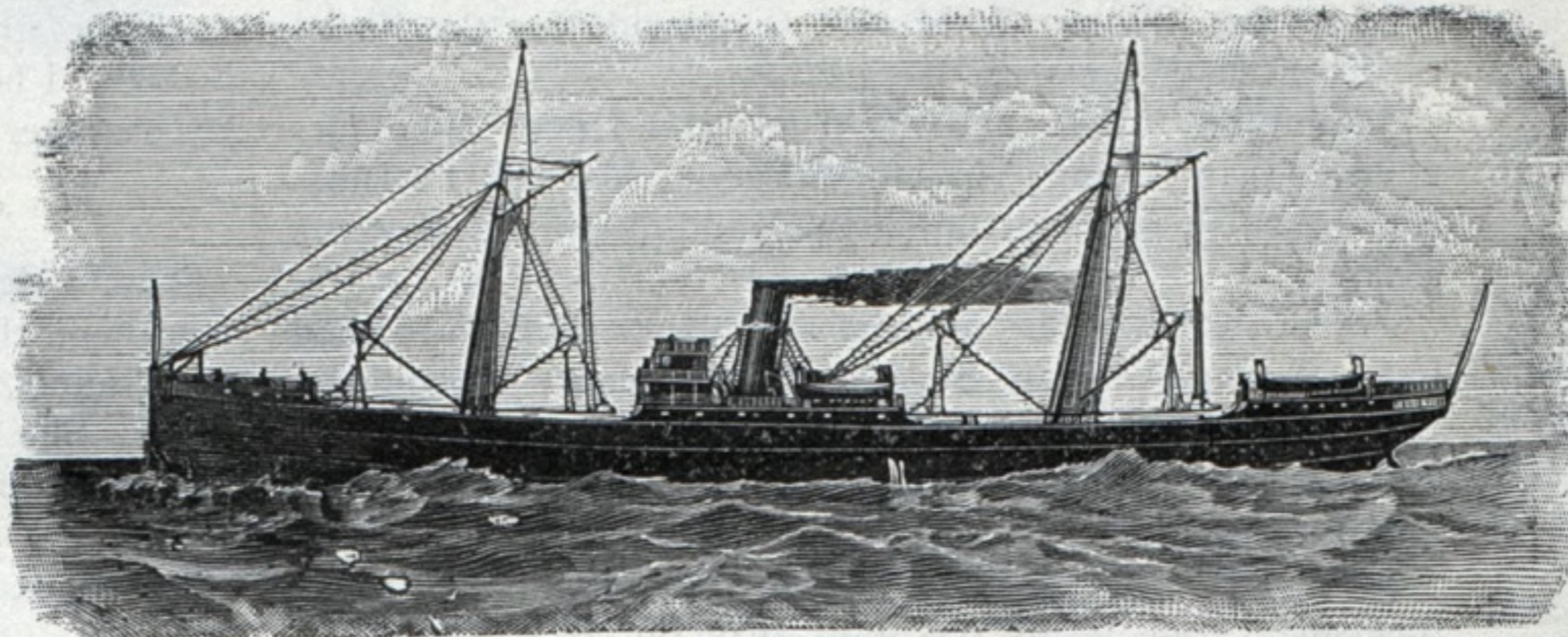
OFFICE:

FOOT WOODWARD AVENUE,
DETROIT, MICH.**F. W. WHEELER & COMPANY,**

BUILDERS OF ALL KINDS OF

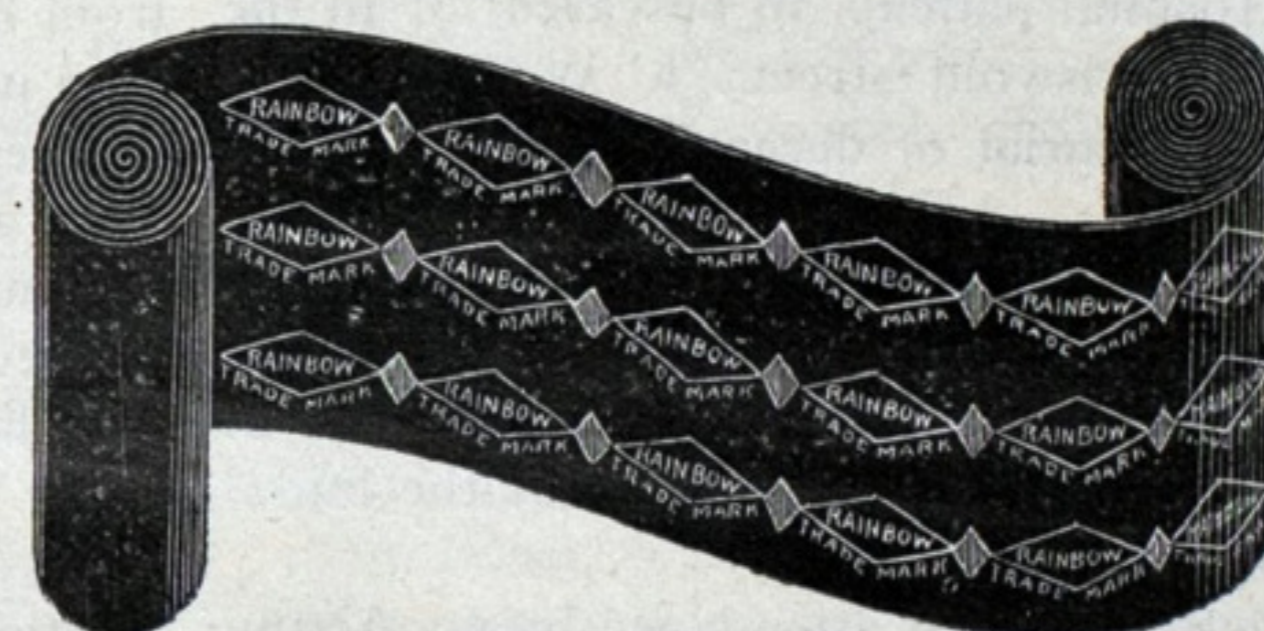
**Iron, Steel, and
Wooden Ships**

FOR LAKE OR OCEAN SERVICE.

West Bay City, Mich.F. W. WHEELER, Pres.
J. S. PORTER, Treas.H. T. WICKES, V. P.
C. W. STIVER, Sec'y.**FRONTIER****Iron Works.**

MARINE ENGINES.

DETROIT, MICH.

William Wilford's**MATCHLESS
WATER-PROOF
CANVAS.**The best in the market for hatch
covers, is stronger, lighter, and more
durable than any water-proof goods
yet produced. It is made of a twisted
thread of pure flax, which renders it
very strong. It will not crack like
cotton goods, which is a great advan-
tage.**EDWARD A. BUNKER,**
Room 617, 27 and 29 William St., New York.**HONEST JOHN.****MR. JOHN H. DEMING,**
GENERAL SUPERINTENDENT PEERLESS
RUBBER MANUFACTURING CO.**RAINBOW PACKING.**THERE IS NO OTHER "JUST AS GOOD."
WHY? Because no one else knows how to make it.**HE INVENTED IT.****Thousands
of Imitators.
No Equal.****Will hold
Highest
Pressure.**

THE COLOR OF RAINBOW PACKING IS RED.

**Don't have to use Wire and Cloth to hold Rainbow.
Rainbow won't Blow Out.****NEW TONNAGE BUILT DURING 1897.**

Sailing and Steam Vessels built in the United States and officially numbered as shown by the records of the Bureau of Navigation, Treasury Department, during the year ended June 30, 1897.

	WOOD.				IRON.				STEEL.			
	Sail.		Steam.		Sail.		Steam.		Sail.		Steam.	
	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.	No.	Gross.
Atlantic and Gulf.....	317	19,872.87	131	14,206.56	.....	.....	3	1,819.38	.....	.....	25	19,769.28
Pacific.....	35	5,497.93	39	3,863.20	.....	.....	.....	.....	.....	.....	.....	.....
Great Lakes.....	19	4,576.52	29	6,088.64	.....	.....	.....	.....	11	34,630.37	15	55,866.29
Western Rivers.....	.....	.....	103	10,834.55	.....	.....	.....	.....	.....	.....	2	617.50
Total.....	371	29,947.32	302	34,992.95	.....	.....	3	1,819.38	11	34,630.37	42	76,253.07

SUMMARY.

	No.	Gross Tons.
Total Sail.....	382	64,577.69
Total Steam.....	347	113,065.40
Grand Total.....	729	177,643.09

PREVIOUS YEAR TO JUNE 30, 1896.

	No.	Gross Tons.
Total Sail.....	387	69,029.77
Total Steam.....	322	134,947.08
Grand Total.....	709	203,976.85

NOTES.

The Liverpool Journal of Commerce of June 10th, says: A cargo of American pig iron has just been landed at Liverpool of over 3,000 tons, for British consumption. This is the largest shipment in one bottom since the imports began.

The thanks of the Record are due the Hydrographic Office, Navy Department, Washington, D. C., for a copy of the N. Atlantic Pilot Chart for July. An excellent current chart deduced from the set and drift of bottle papers accompanies the usual delineation.

It is announced that the Maryland Steel Company has closed a contract to supply 7,500 tons of steel rails to a firm in India, to be shipped from New York. These rails

will be the first ever sent from the United States to that country. That it is possible for America to sell steel rails to India in competition with Great Britain, Germany, and other great manufacturing countries, shows the absurdity of the cry for protection, at least to that interest.

The Cat.—Smith was ordered up country to a higher berth, and everything was arranged for removal except the cat. As his wife did not wish to take the cat with them, and would not give her away lest she might not have a good home, it was decided to have her destroyed. On the evening before the removal Smith fastened a brick round the cat's neck and put her into a bucket of water. When he went next morning to take her out to bury her, he found her alive and looking very happy. She had

drunk up all the water and was sitting on the brick.—

A Boston lady, residing for the summer in a beautiful suburb, saw one morning, in the stable yard, a magnificent place for raising chickens. With an instinct born of environment, she took the train for the city, and visiting Quincy market, inspected the live fowl for sale there. A coop of Plymouth Rocks took her fancy from their name and were ordered sent home, where they were duly installed in the fine quarters provided. A few days later the Irish cook, who had become superintendent of the poultry, visited the lady of the house and said, "Plase mum, if ye wants to raise chickens, wouldn't it be well to buy a rooster? They do all be pullets ye sent home." A rooster was provided.

The Bohemians have a proverb, "Every fish has another for prey"; the wels (Silurus) has them all. This is the largest fresh water fish found in the rivers of Europe, except the sturgeon; it often reaches five or six feet in length. It destroys many aquatic birds, and we are assured that it does not spare the human species. On the 3d of July, 1700, a peasant took one near Thorn that had an infant entire in its stomach. They tell in Hungary of children and young girls being devoured on going to draw water; and they even relate that on the frontiers of Turkey a poor fisherman took one that had in its stomach the body of a woman, her purse full of gold, and a ring. The fish is even reputed to have been taken sixteen feet long.—Harper's Round Table.

The Light-House Board has just issued the usual annual corrected list of beacons, buoys and day marks with sailing directions on the Northern Lakes and rivers. A copy will be sent free of charge to any shipmaster on application to the Board at Washington or the Inspector of the District at Chicago, Buffalo or Detroit. Mariners and others interested in commerce and the

preservation of life and property from loss by shipwreck on our coasts are earnestly requested to give prompt information to the Inspector of the Ninth Light-House District, Chicago, Ill., the Inspector of the Tenth Light-House District, at Buffalo, N. Y., or the Inspector of the Eleventh Light-House District, at Detroit, Mich., of cases in which any of the buoys or day-marks described in this list are out of position, and of all cases in which the published instructions from this Board are not strictly executed, that the Board may, with as little delay as possible, apply the proper remedy, and prevent neglect of duty in matters connected with the day-marks of the United States.

The works of the Roberts' Safety Water Tube Boiler Co. are still very busy, and have been working night and day for some time past, notwithstanding their increased size, owing to extensions which have doubled their capacity twice in the last seven years. This company has built nearly 900 boilers to date and now has orders enough on hand to keep them busy for the next three months without considering other orders, which are constantly coming in. Although the Roberts' Boiler was originally used almost exclusively for steam launches and steam vessels of similar character, they are now in general use for vessels of different governments and also for factory purposes, electric light and power, portable paving and drying plants, steam canal boats, floating dredges, excavators, sugar and coffee plantations, portable sawmills, and many other purposes for which a perfectly safe, light and small but powerful boiler would be advantageous. This company reports that its business could not be better and that its works have never been so busy previously at this time of the year. Of course, their orders for boilers for launches, yachts, passenger steam boats, freight steamers, etc., are increased, notwithstanding the demand for boilers for other purposes. The works of this company are situated at Red Bank, N. J., on the N. Y. & L. B. R. R. and their New York office is at 39 & 41 Cortlandt street.

VISIBLE SUPPLY OF GRAIN

As compiled for The Marine Record by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Albany.....		30,000	50,000		
Baltimore.....	305,000	793,000	170,000	69,000	
Boston.....	333,000	1,109,000	102,000		1,000
Buffalo.....	564,000	356,000	702,000	203,000	298,000
Chicago.....	4,025,000	7,562,000	1,871,000	562,000	19,000
Cincinnati.....	1,000	11,000	8,000	1,000	1,000
Detroit.....	20,000	24,000	7,000	20,000	
Duluth and Superior.....	1,175,000	17,000	413,000	372,000	248,000
Indianapolis.....	1,000	54,000			
Kansas City.....	94,000	172,000	120,000	9,000	
Milwaukee.....	106,000	3,000	1,000	142,000	92,000
Minneapolis.....	8,424,000	95,000	150,000	16,000	24,000
Montreal.....	236,000	18,000	475,000	31,000	43,000
New York.....	838,000	1,621,000	2,262,000	448,000	65,000
Oswego.....	65,000	155,000		8,000	20,000
Peoria.....		2,000	35,000	1,000	
Philadelphia.....	73,000	488,000	108,000		
St. Louis.....	84,000	363,000	67,000	6,000	
Toledo.....	219,000	471,000	42,000	65,000	
Toronto.....	86,000		46,000		21,000
On Canal.....	224,000	822,000	17,000	159,000	90,000
On Lakes.....	710,000	1,573,000	1,566,000	136,000	235,000
On Mississippi.....		182,000	6,000		
Grand Total.....	17,583,000	15,997,000	8,218,000	2,248,000	1,157,000
Corresponding Date 1896.....	47,199,000	9,100,000	8,548,000	1,462,000	813,000

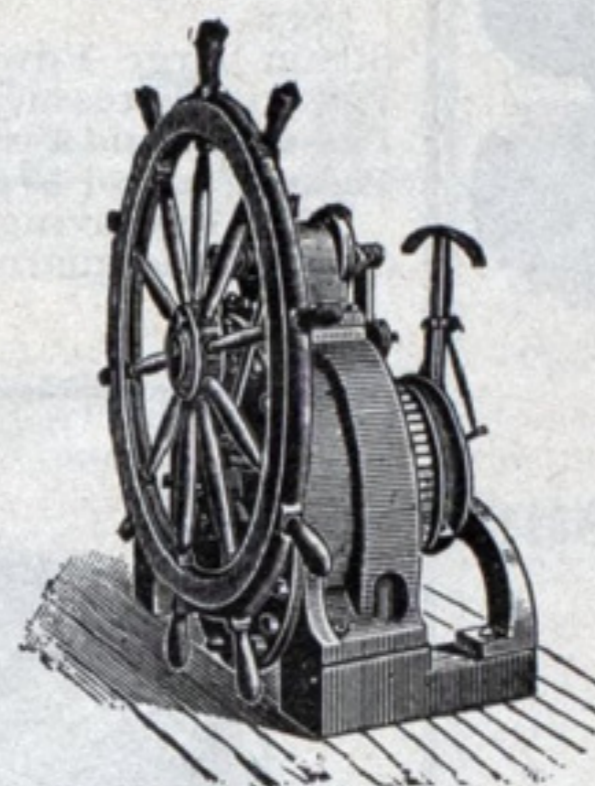
SAILOR TO THE LAST.

Many have been the peculiar wishes of men still in the flesh with regard to the disposition of their remains when they have "shuffled off this mortal coil," says the Liverpool Journal of Commerce. Few, however, claim to be as appropriate as they may be original, though we know of one case in which a ship's carpenter built his own coffin and for the remainder of his days used it as a tool chest. A case of peculiar singularity and appropriateness came under our notice while "going the rounds" yesterday. See-

ing a well-built boat of miniature dimensions under construction on the premises of Mr. Philip Windram, Liverpool, curiosity was naturally aroused, and the inquiry as to the purposes of such an apparently useless craft elicited the curious information that the boat was being built to the order of an undertaker, to serve as his final resting place, in place of the orthodox and more suggestive, but less attractive coffin. The build of the boat is strong, and she is in all respects constructed on the lines of an ordinary double-ended life boat, without, perhaps, quite as much shear as is usually found in such craft. She is provided with a wooden deck or cover extending fore and aft, and fitted lid-fashion to go over the gunwale. This boat coffin is carved built and seven feet long, and will be painted. Life lines will be fixed round her, and when completed she will present a very attractive appearance. Two oars are to be supplied, and she will have a rudder and tiller fitted. She is built of pine, West African mahogany, oak, and elm. The internal "get up" is to be left for the undertaking furnisher, and will no doubt be of a fitting character.

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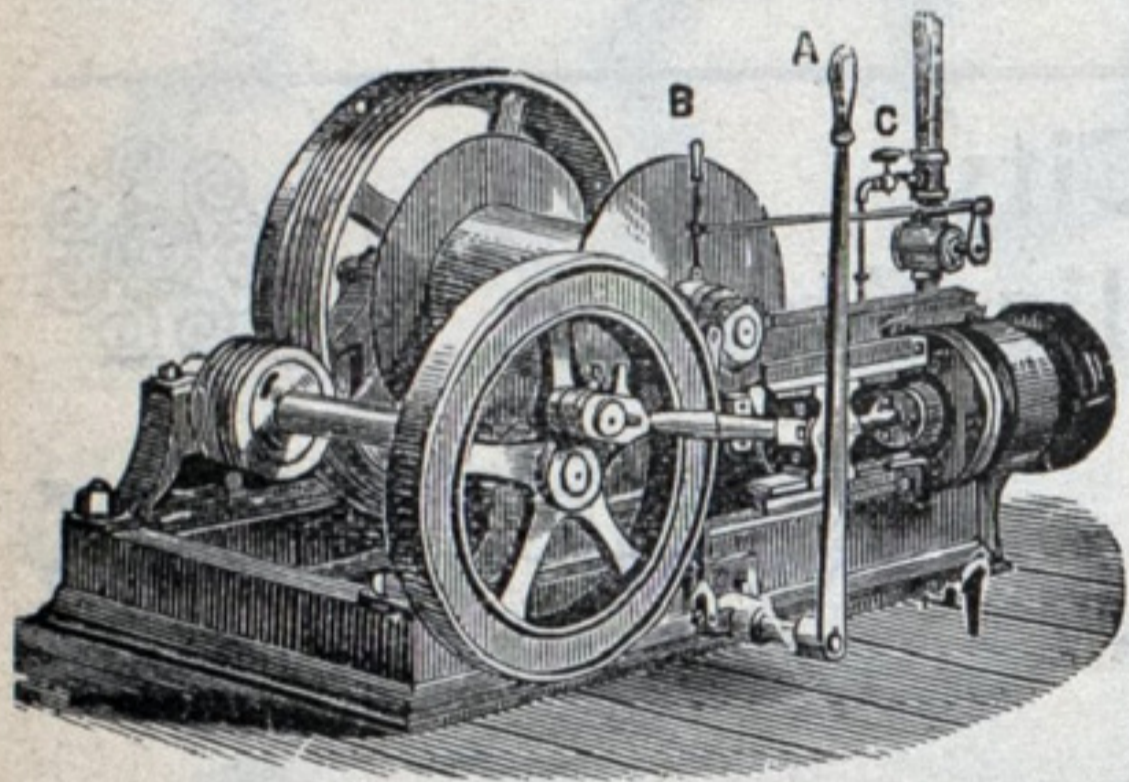
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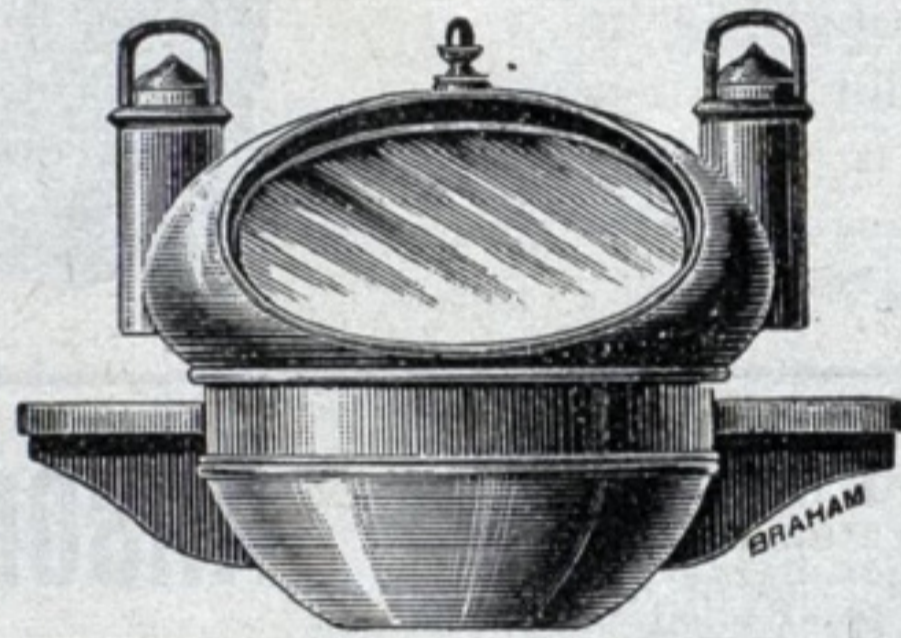
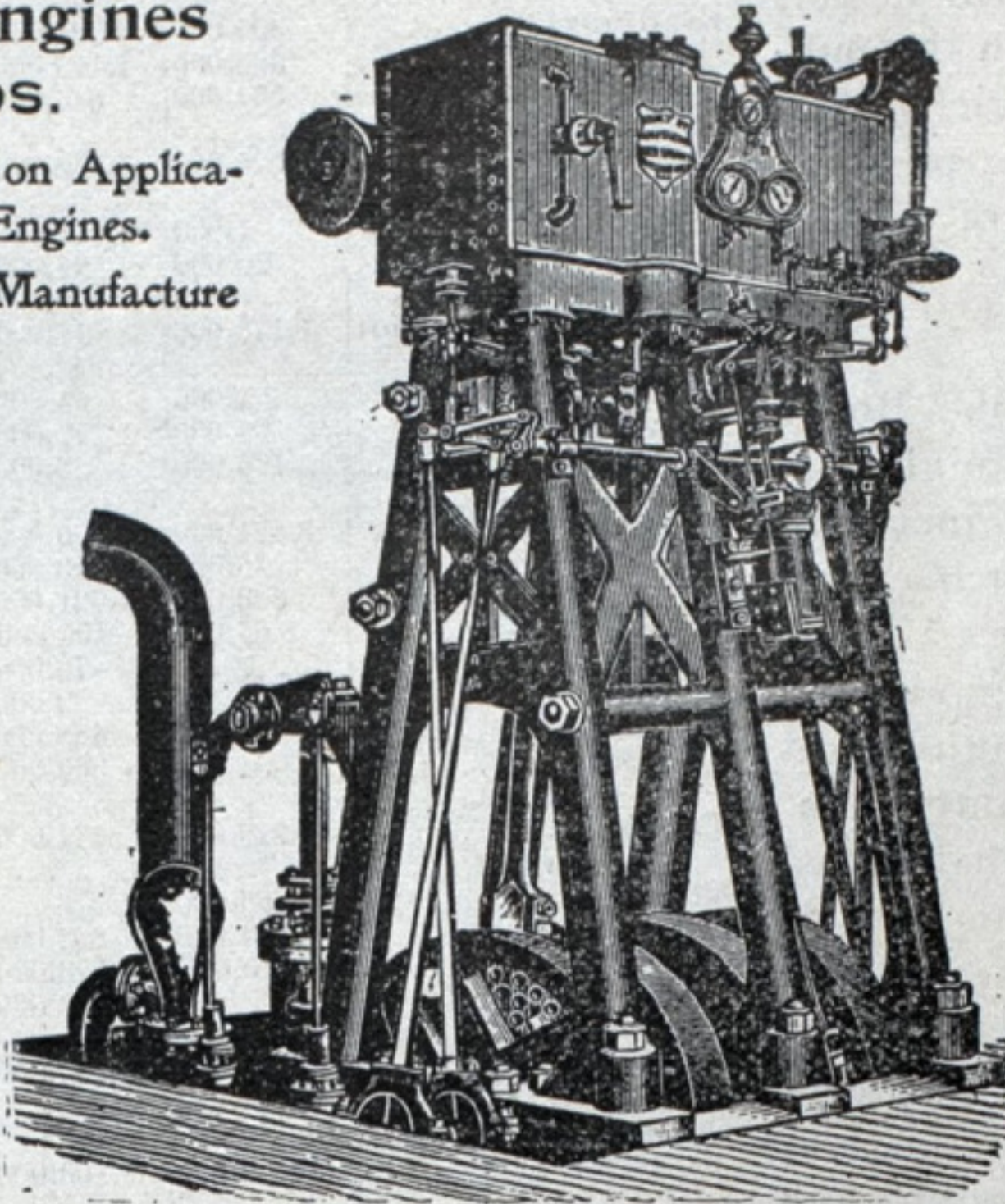
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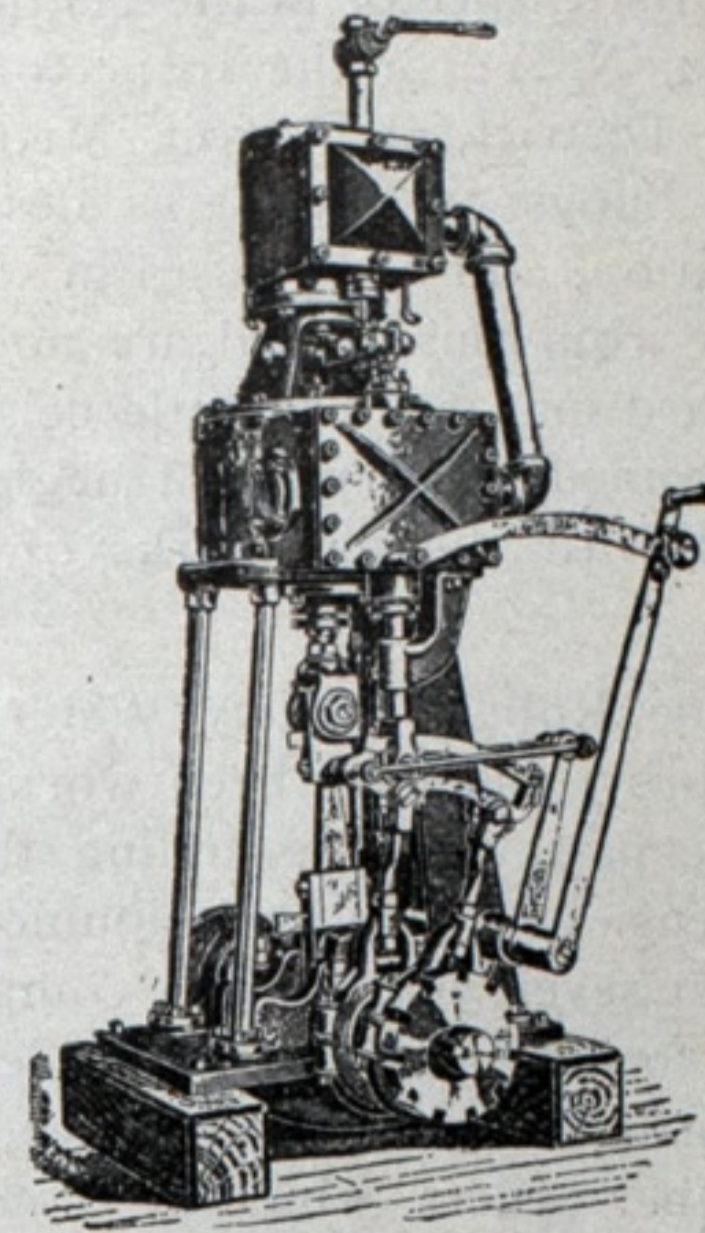
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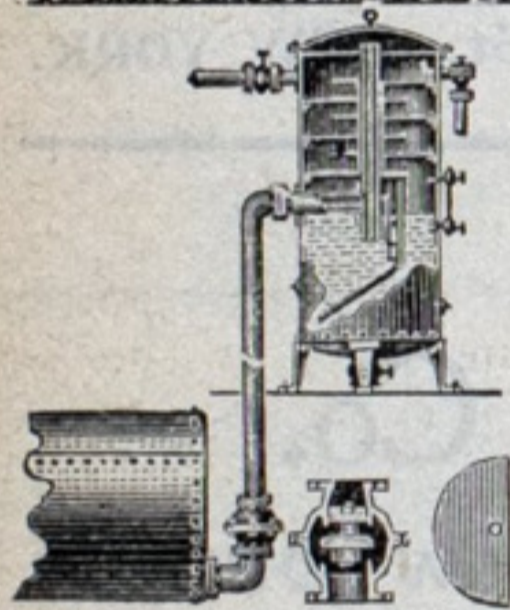
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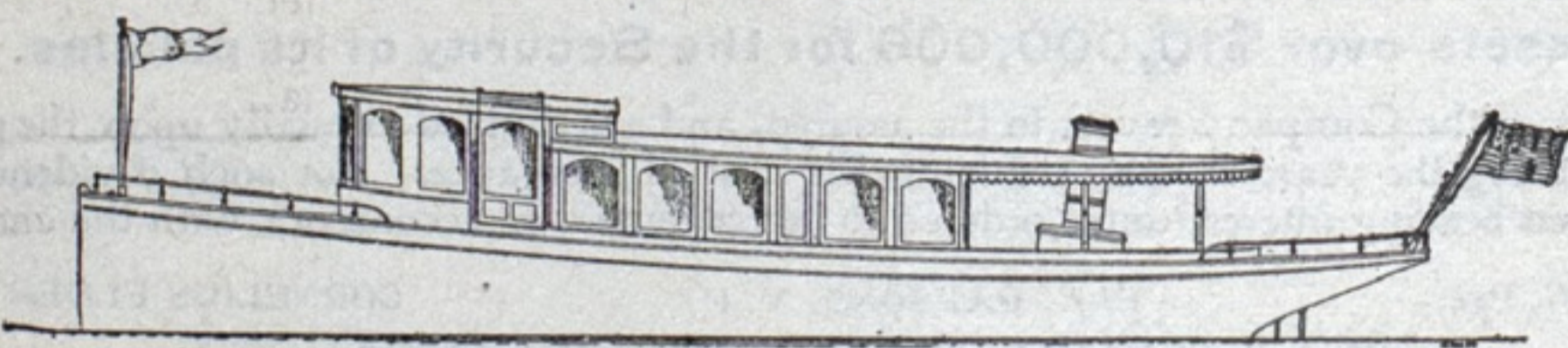
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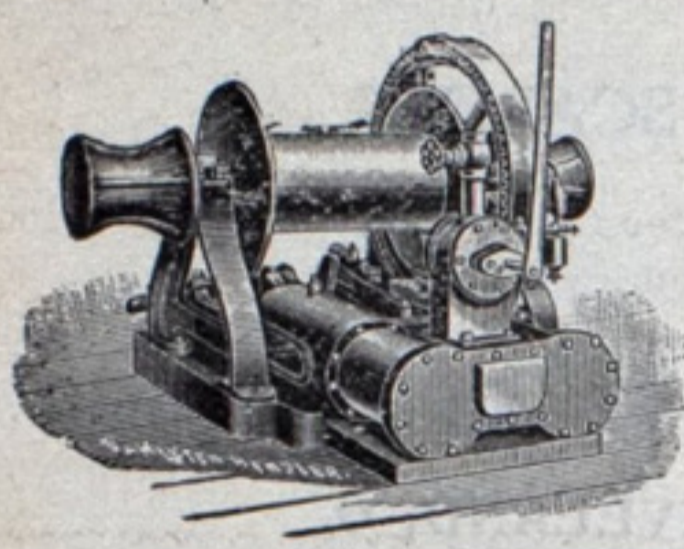
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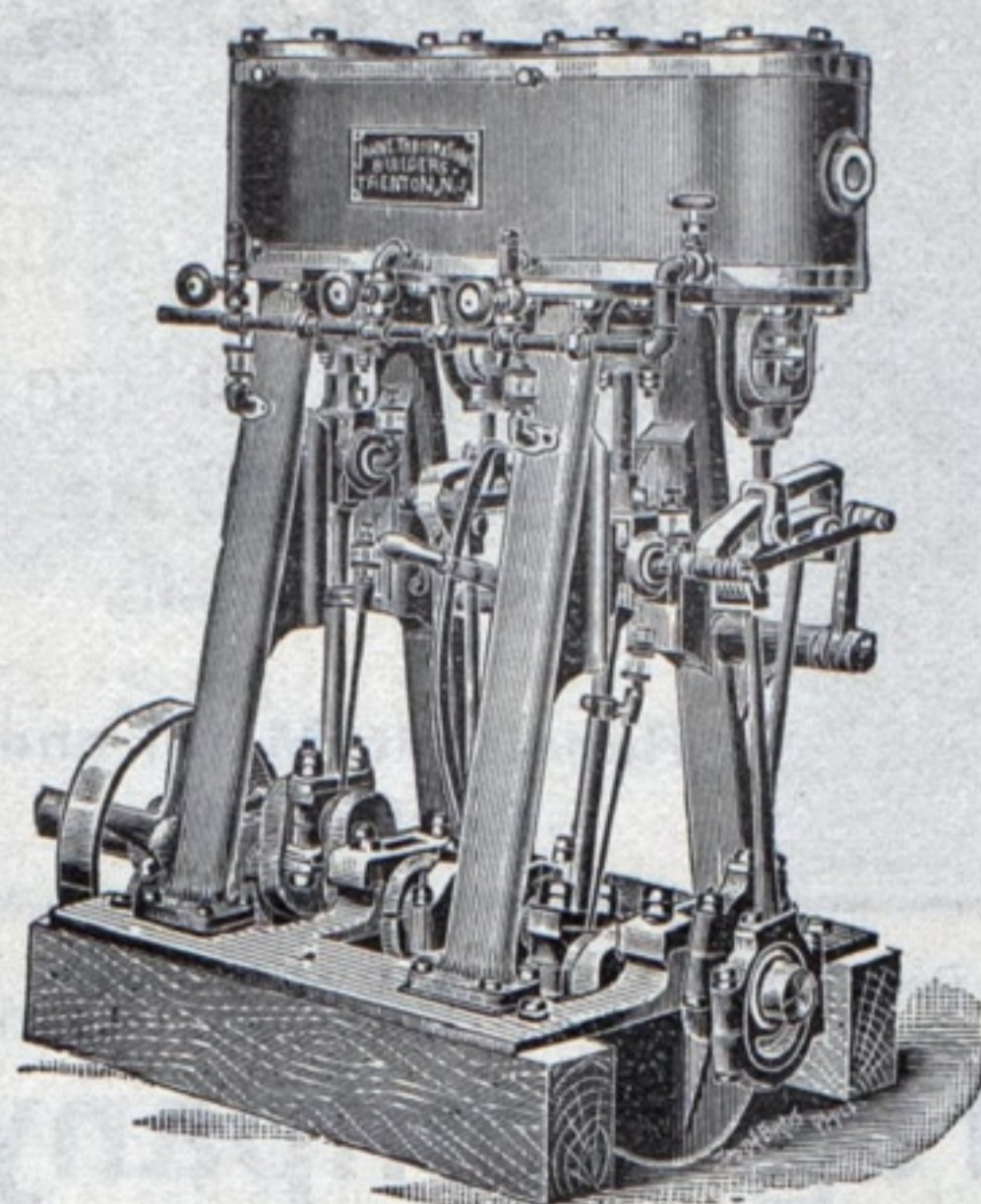
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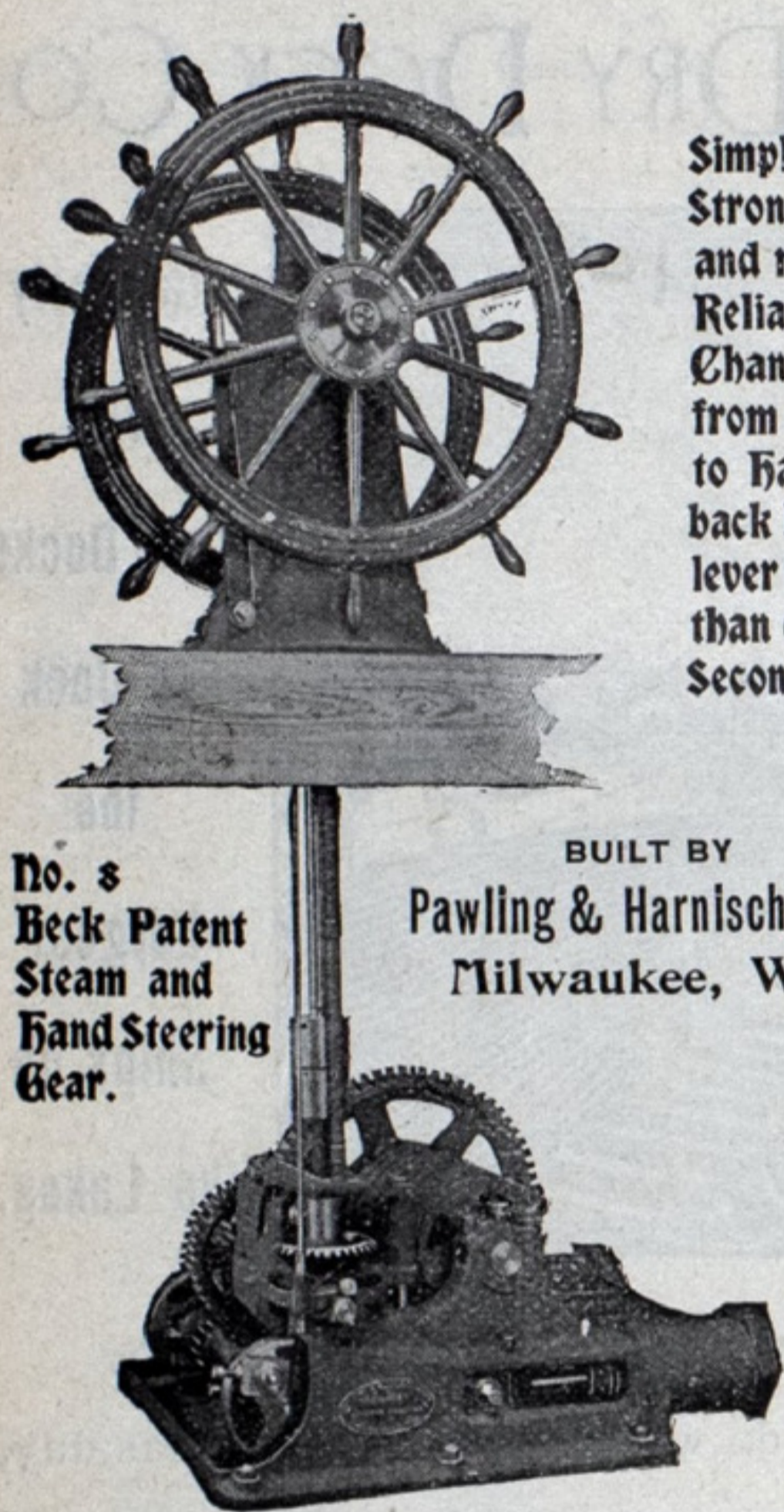
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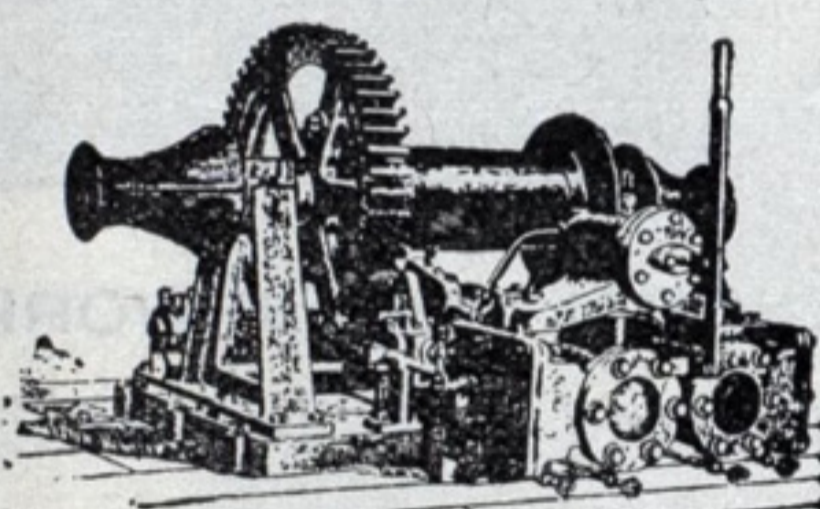
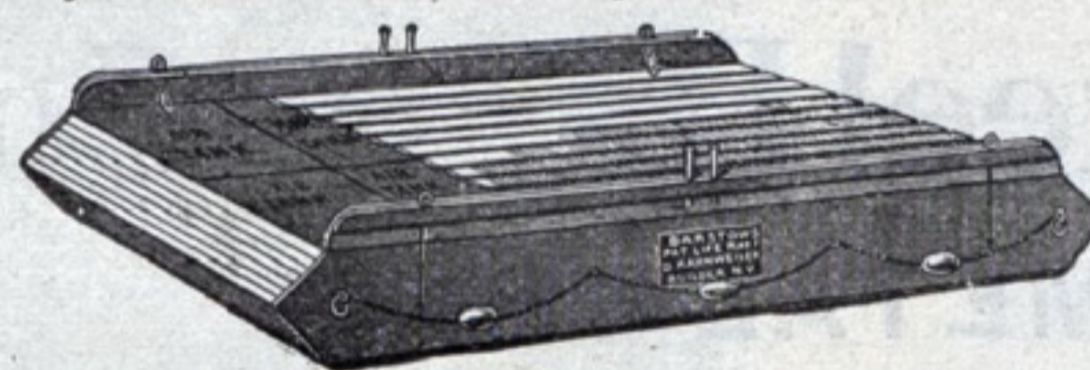
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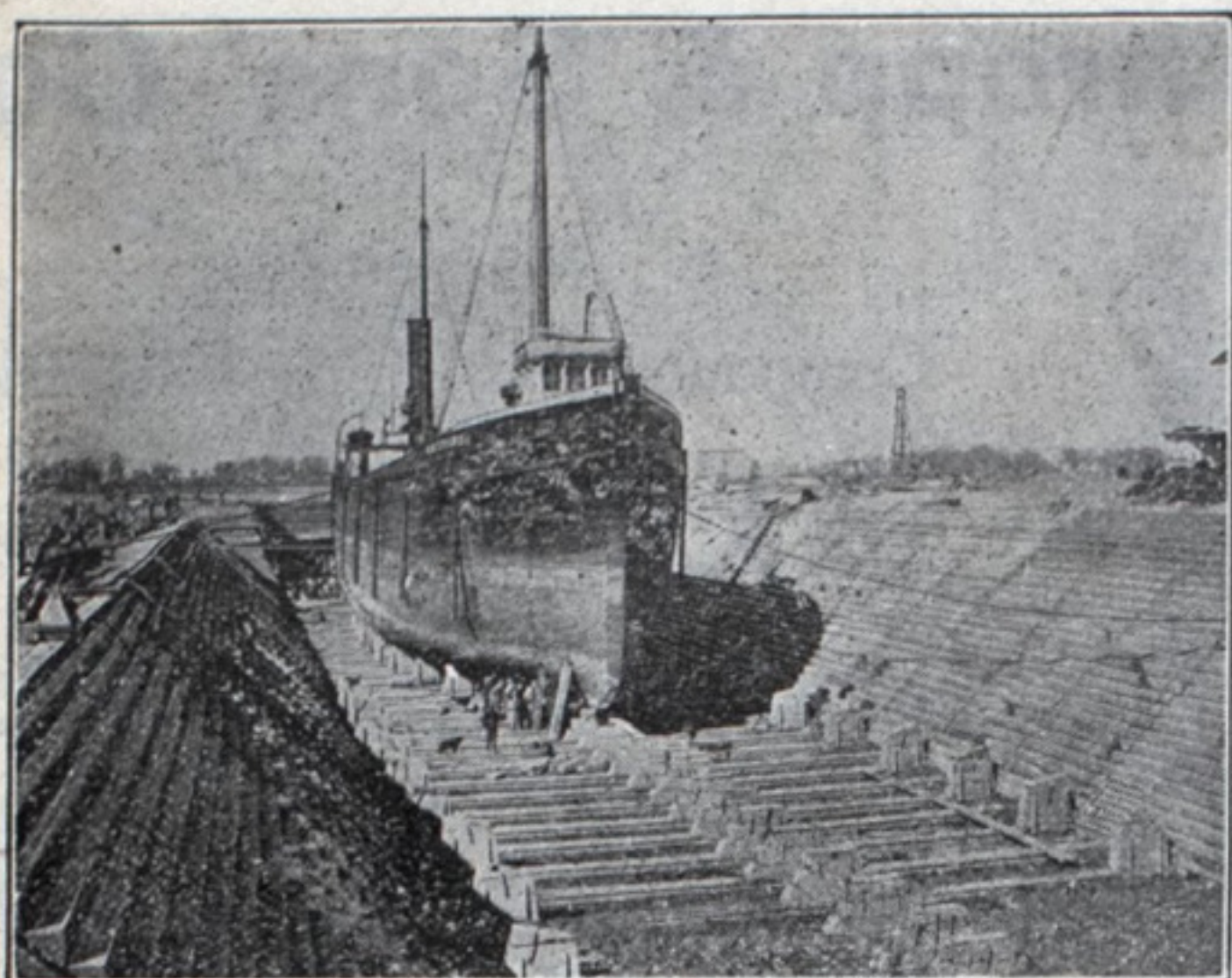
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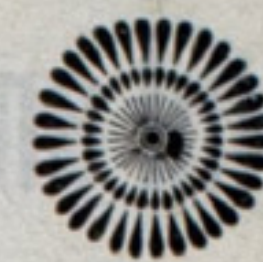
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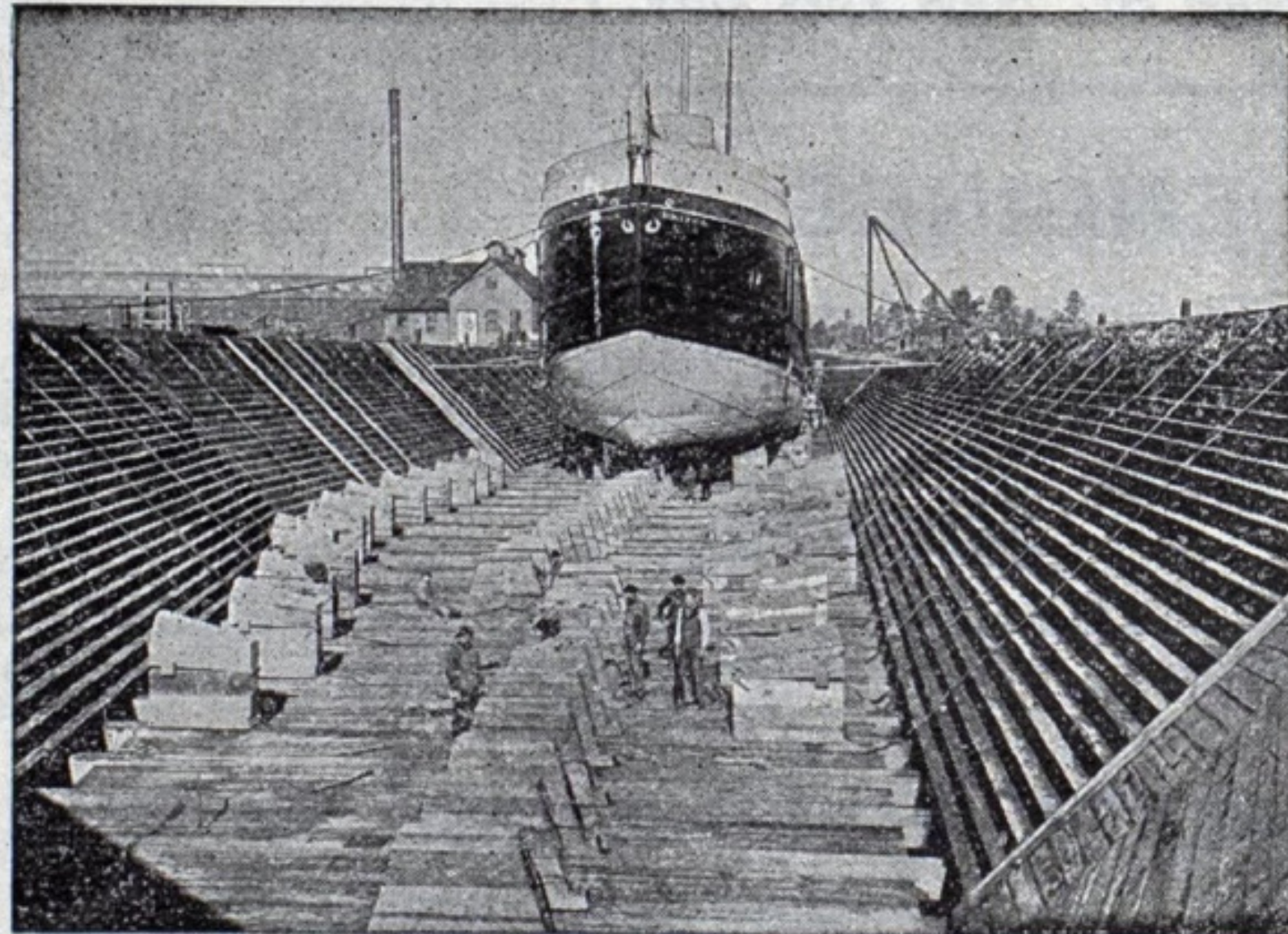
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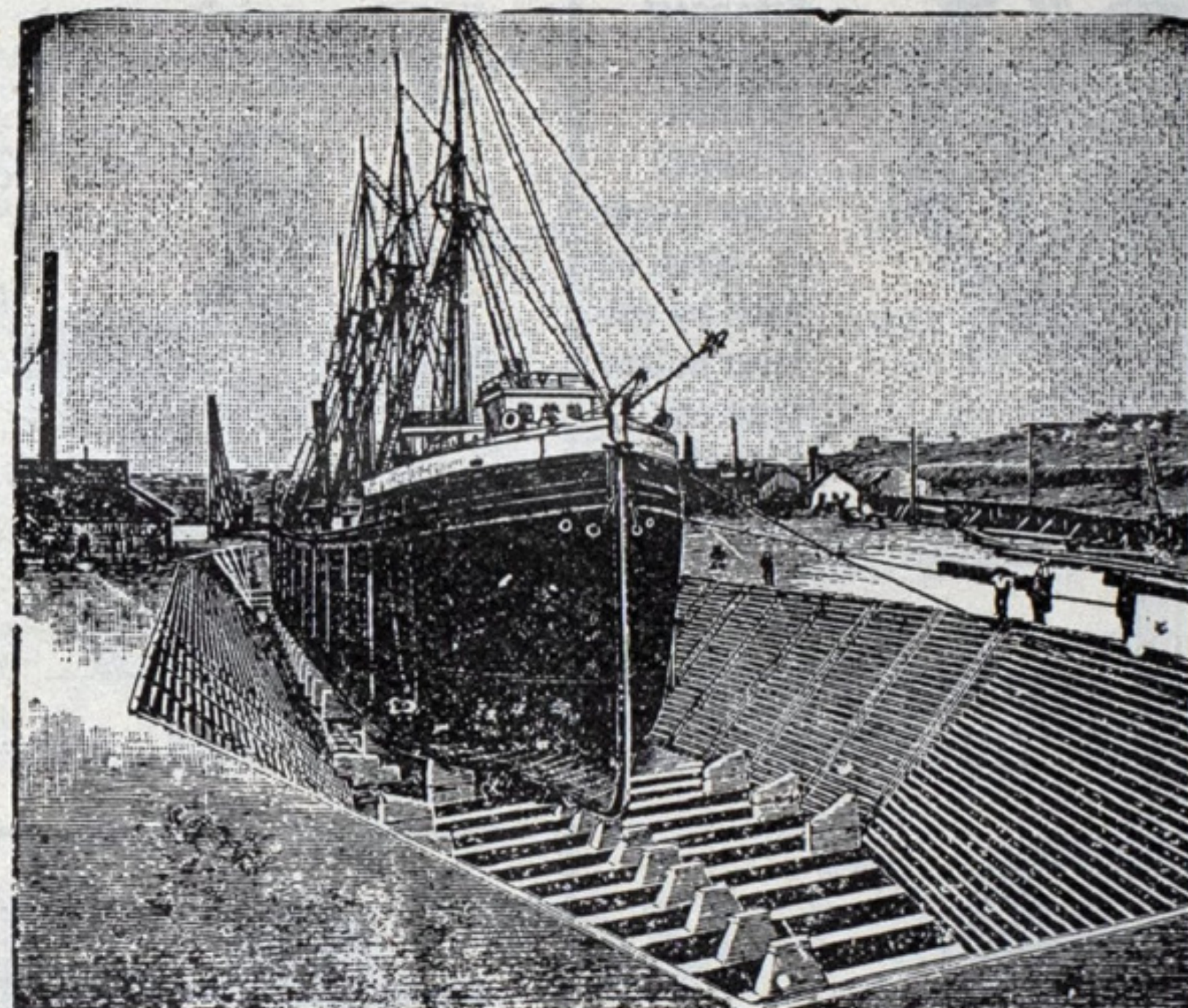
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